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Pinellas Environmental Restoration Project
Sitewide Environmental Monitoring
Quarterly Progress Report
for the
Young - Rainey STAR Center

October through December 2002

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Prepared by
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Acronyms and Abbreviations

AST	air stripper tower
BTEX	benzene, toluene, ethylbenzene, and xylene
°C	degrees Celsius
CMS	Corrective Measures Study
CMIP	Corrective Measures Implementation Plan
COPC	contaminant of potential concern
DCA	dichloroethane
DCE	dichloroethene
DOE	U.S. Department of Energy
ECL	environmental checklists
EPA	U.S. Environmental Protection Agency
FDEP	Florida Department of Environmental Protection
ft	feet
ft/ft	feet per foot
HSWA	Hazardous and Solid Waste Amendment
ICM	interim corrective measures
IMW	Interim Measures Work (Plan)
IWNF	Industrial Wastewater Neutralization Facility
MCL	maximum contaminant level
MSL	mean sea level
µmhos/cm	micromhos per centimeter
µg/L	micrograms per liter
mg/L	milligrams per liter
mV	millivolt
NAPL	non-aqueous phase liquid
NTU	Nephelometric Turbidity Units
PCIC	Pinellas County Industrial Council
QA/QC	quality assurance/quality control
RCRA	Resource Conservation and Recovery Act
RFA	RCRA Facility Assessment
RFP	request for proposal
RPD	relative percent difference
STAR Center	Young – Rainey Science, Technology, and Research Center
STL	Severn Trent Laboratories
SWMU	solid-waste management unit
TCE	trichloroethene
TCOPC	total contaminant of potential concern
TVOCs	total volatile organic compounds
VOCs	volatile organic compounds
WWNA	Wastewater Neutralization Area

1.0 Introduction

The Young - Rainey Science, Technology, and Research Center (STAR Center) is a former U.S. Department of Energy (DOE) facility constructed in the mid-1950s in Pinellas County, Florida. The 99-acre STAR Center is located in Largo, Florida, and lies in the northeast quarter of Section 13, Township 30 South, Range 15 East (Figure 1). The STAR Center, while owned by DOE, primarily manufactured neutron generators for nuclear weapons. Other products manufactured at the STAR Center have included radioisotopically powered thermoelectric generators, thermal batteries, specialty capacitors, crystal resonators, neutron detectors, lightning-arrestor connectors, and vacuum-switch tubes. In 1987, the U.S. Environmental Protection Agency (EPA) performed a Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA) at the site to gather information on potential releases of hazardous materials. In February of 1990, EPA issued a Hazardous and Solid Waste Amendment (HSWA) permit to DOE, enabling DOE to investigate and perform remediation activities in those areas contaminated by hazardous materials resulting from DOE operations. On March 17, 1995, DOE sold the facility to the Pinellas County Industrial Council (PCIC). The sales contract included clauses to ensure continued compliance with Federal, State, and local regulations while DOE remediates the site. On July 1, 1999, the PCIC was disestablished and ownership of the STAR Center changed to the Pinellas County government. In November 2000, the State of Florida received HSWA authorization from the EPA. The Florida Department of Environmental Protection (FDEP) issued a new HSWA Permit to DOE in January 2002.

Administration of DOE activities at the facility is the responsibility of the DOE Idaho Operations Office. Responsibility for environmental restoration activities, conducted under the EPA RCRA Corrective Action Program of 1984, was transferred from DOE's Pinellas Area Office to DOE's Grand Junction Office in October 1997. S.M. Stoller Corporation (Stoller), a prime contractor to the DOE Grand Junction Office, provides technical support to DOE for remediation and closure of all active solid-waste management units (SWMUs) on site.

Ground water monitoring and remediation are also ongoing at the 4.5 Acre Site. The 4.5 Acre Site is a parcel of land that was originally part of the DOE facility but was sold to a private individual. In 1984, ground water contamination was discovered at this site. Currently, DOE leases the site from the land owner and is actively pursuing ground water cleanup. The 4.5 Acre Site is under purview of Florida State regulations enforced by the FDEP. A summary of remediation activities can be found in the *Quarterly Progress Report for the Young – Rainey STAR Center's 4.5 Acre Site*.

The EPA RFA Report and the HSWA permit identified 15 sites at the former DOE facility that may have experienced environmental contamination as a result of past activities. Upon completion of the RCRA Facility Investigation, 11 of the 15 SWMUs were recommended by DOE and approved by EPA Region IV and the FDEP for no further action (DOE 1994). A twelfth site, the Former Pistol Range Site, was remediated in 1993 and recommended by DOE and approved by EPA Region IV and the FDEP for no further action.

Two additional SWMUs, the West Fenceline Site and the Wastewater Neutralization Area/ Building 200 (WWNA/Building 200), were identified after the HSWA permit was issued, bringing the total to 17 SWMUs that have been identified and investigated at the STAR Center. Remediation of the West Fenceline Site was completed in 1997 and DOE recommended, and EPA Region IV and FDEP approved, no further action. A Corrective Measures Study

(CMS)/Corrective Measures Implementation Plan (CMIP) was prepared and submitted in 1997 to EPA Region IV and FDEP to address the contamination at the WWNA/Building 200 Area.

Therefore, there are currently four sites that have contamination in the surficial aquifer ground water at levels in excess of protective standards. These four SWMUs, the Old Drum Storage Site (PIN06), the Industrial Drain Leaks-Building 100 Area (PIN12), the Northeast Site (PIN15), and the WWNA/Building 200 Area (PIN18), are undergoing remediation activities. Two SWMUs, PIN06 and PIN12, are currently being remediated together because of their similar ground water contamination and proximity. These two SWMUs are collectively known as the Building 100 Area. Figure 2 depicts the location of the four SWMUs.

Additional background information relative to each SWMU is briefly described below. This document also serves as the quarterly progress report for each of these four SWMUs. The results of monitoring activities, a summary of the treatment system performance, and a summary of ongoing and projected work are provided in this report.

1.1 Building 100 Area

The Building 100 Area (PIN06 and PIN12) is located in the southeast portion of the STAR Center. The Old Drum Storage Site is the former location of a concrete storage pad equipped with a drain and containment system used to store hazardous waste including dichloromethane (also known as methylene chloride), ignitable liquids, arsenic, and calcium chromate solids (DOE 1987a). Empty drums containing residual waste solvents were also stored in this area (DOE 1987b). The concrete pad was located near the northwest corner of Building 100. The pad was removed in October 1983 in accordance with an FDEP closure permit (DOE 1987a), and a closure report was submitted to the FDEP in August 1986 (DOE 1986). The decommissioning of the pad and the cessation of drum storage effectively removed the potential for a future contaminant source at PIN06.

Building 100 is the largest building at the STAR Center and covers approximately 11 acres. In the past, offices, laboratories, and production facilities for the DOE were housed in the building. SWMU PIN12 consists of the liquid waste drainage system serving Building 100. Four individual drainage systems (sanitary, chemical, health physics, and storm water) were present within the building. In 1989, all four drainage systems were investigated, including verifying the system routing and the condition of underground and above-ground piping and ancillary equipment (EMC 1989). As a result of this investigation, the health physics and chemical drainage systems were flushed, grouted, and abandoned (DOE 1997). Some of the chemical drain lines were replaced by an above-ground system currently used by tenants of the building.

A CMS and CMIP were completed and approved for the Building 100 Area because volatile organic compounds (VOCs) concentrations measured in ground water at the Old Drum Storage Site (PIN06) and one monitoring well located at the northwest corner of Building 100 (PIN12) exceeded the Safe Drinking Water Act and FDEP maximum contaminant levels (MCLs). Subsequent investigations revealed elevated VOCs concentrations under Building 100 and downgradient to the southeast as well. On August 15, 2000, the EPA approved the Building 100 CMIP Addendum. The FDEP approved this same document on November 15, 1999.

Commencing in May 2001, DOE began an analysis of the potential remediation strategies for the three Building 100 Area tasks: plume control, source treatment, and dissolved phase treatment.

The *Building 100 Area Remediation Technology Screening Report* (DOE 2001) was prepared and assembled a list of remediation technologies, categorized them into the remediation tasks, and conducted an initial screening of the technologies. This initial screening eliminated the technologies that obviously would not work and recommended technologies that should be retained for detailed evaluation at a later time. The final technology for each task will be identified at a later date.

The *Building 100 Area Plume Control Technology Selection Report*, prepared in February 2002, conducted a detailed evaluation of five plume control technologies and recommended a technology that should be implemented for plume control at the Building 100 Area. Based on this evaluation, enhanced bioremediation was recommended to control the contaminant plume.

1.2 Northeast Site

In the late 1960s, before construction of the East Pond, drums of waste and construction debris were disposed of in the swampy area of the Northeast Site. The East Pond was excavated in 1968 as a borrow pit. In 1986, an expansion of the East Pond was initiated to create additional storm-water retention capacity. Excavation activities ceased when contamination was detected directly west of the East Pond. EPA identified the Northeast Site as a SWMU. An Interim Corrective Measures (ICM) Study was developed and submitted to EPA and approval of this document was received in October 1991. An interim ground water recovery system for the Northeast Site was installed, and operation commenced in January 1992. The implementation of this ICM system at this site is consistent with the regulatory goals of the EPA's RCRA Corrective Actions (Subpart S).

The ICM system, as initially installed, consisted of four recovery wells equipped with pneumatic recovery pumps, a holding tank, centrifugal transfer pumps, and approximately 2,500 feet (ft) of transfer and secondary containment piping. During 1993, DOE proposed a reconfigured system for the site consisting of four shallow and three deep recovery wells. After EPA approved the system upgrade, the system was reconfigured and became operational on March 1, 1994.

Between August and October 1995, after EPA and FDEP approval, a portion of the Northeast Site was excavated to remove debris and other materials that could inhibit future corrective measures. Location of the areas of excavation was based primarily on the results of a geophysical survey and knowledge of existing utility locations. Detailed descriptions of the debris removal activities were submitted to EPA and FDEP as part of the *Northeast Site Interim Measures Quarterly Progress Report* (DOE 1996).

In 1996, DOE submitted a CMIP to EPA Region IV and FDEP. This plan was approved by both regulatory agencies in 1997. As part of the Northeast Site CMS and CMIP, a pump-and-treat system in conjunction with a subsurface hydrogeologic barrier wall to prevent migration of the contaminant plume was identified as the best available technology. A pretreatment system for iron removal, an air stripper unit, and a tank for holding treated ground water before discharge to the Pinellas County Publicly Owned Treatment Works were recommended. The treatment system was constructed in early 1997 and became operational by July 1997 with seven Northeast Site recovery wells and two Building 100 recovery wells pumping to the system influent tank. Subsequently, several additional recovery wells were installed, and some of the old recovery wells were abandoned.

During 1997, anaerobic bioremediation and rotary steam stripping pilot tests were conducted in the northern and southern portions of the Northeast site, respectively. These tests were designed by an Innovative Treatment Remediation Demonstration group of regulatory and industry members to provide remedial options at the STAR Center. At the conclusion of the field tests in July 1997, pump-and-treat technology resumed at the Northeast Site.

An *Interim Measures Work (IMW) Plan for Remediation of Non-Aqueous Phase Liquids at the Northeast Site* was submitted to the FDEP in late November 2001. The purpose of this document was to present the plan for the interim measure to remediate non-aqueous phase liquids (NAPLs) at the Northeast Site. An ICM is warranted because it supports the long-term corrective action to remediate the dissolved phase contamination in the surficial aquifer to FDEP drinking water MCLs. Without this measure, NAPLs will continue to act as a source of dissolved contamination, resulting in contaminant concentrations in ground water well above the MCLs. The FDEP approved this document on January 10, 2002.

Concurrent with the preparation of the IMW Plan, an Environmental Checklist recommending Categorical Exclusion was prepared and approved by DOE on December 19, 2001. The Categorical Exclusion pathway was approved based upon the fact that the NAPL remediation of Area A is a small-scale, short-term cleanup action and the siting, construction, and operation of treatment facilities are temporary and pilot-scale in size.

1.3 WWNA/Building 200 Area

The WWNA/Building 200 Area includes the active Industrial Wastewater Neutralization Facility (IWNF), the area around Building 200, and the area south of the neutralization facility. The IWNF refers to the physical treatment facility that currently receives sanitary and industrial wastewater and has been in operation since 1957.

A CMS Report and CMIP were completed in 1997 for this SWMU because vinyl chloride, trichloroethene (TCE), and arsenic were detected in surficial aquifer ground water at concentrations above Federal and State MCLs. The recommended remediation alternative for the WWNA/Building 200 Area was ground water recovery with the Building 100 Area wells and an additional recovery well located in the WWNA. The CMIP recommended that recovered water from the additional well be discharged directly to the IWNF and that the recovery well in the WWNA/Building 200 Area will withdraw surficial aquifer ground water directly from the arsenic plume and thereby reduce the contaminant mass and prevent contaminant migration.

The FDEP response to the CMS/CMIP concerning arsenic soil contamination in the upper 2 ft suggested that a treatment technology, air sparging, was eliminated too early. DOE then proposed a multi-phased Interim Action that included operating the recovery well for 6 months, then pulsing the system, as well as performing geochemical analyses and leaching studies of the site. On January 21, 1999, FDEP approved the proposed interim remedial action.

Additionally, EPA Region IV also approved the interim remedial action and concurred with the FDEP's position regarding the arsenic contamination. The EPA also requested an addendum or modification to the CMIP that addresses DOE's final selection of the remediation technology and a timeline for the completion of these activities.

In early June 1999, the WWNA recovery well commenced operation. All arsenic concentrations from the WWNA recovery well, PIN18−RW01, were below the STAR Center's daily maximum discharge standard for arsenic in wastewater of 0.20 milligrams per liter (mg/L) until shutdown.

Additional details concerning the impacts of ground water extraction are reported in the WWNA/Building 200 Area CMIP Addendum (DOE 2000b). Modifications to the recovery of ground water were proposed based on data collected through November 1999 and consisted of the installation of two new recovery wells screened at shallow intervals. The CMIP Addendum was submitted to the regulators and approved by FDEP and EPA. A Statement of Basis (DOE 2000a) was issued by DOE in late September 2000. This document provides a summary of environmental investigations and proposed cleanup alternatives for the WWNA/Building 200 Area. Current activities at the WWNA include ground water extraction from two recovery wells, PIN18−RW02 and −RW03, that discharge to the STAR Center's wastewater system. Table 1 depicts the results of the analysis of arsenic in ground water that is being recovered from these two wells.

1.4 Site Update

The tables summarizing the VOCs results have changed beginning with this report. Over the last year, DOE has been working with FDEP to assemble a list of contaminants of potential concern (COPCs) for the 4.5 Acre Site and the STAR Center. The COPCs are the contaminants that are frequently measured above their respective maximum contaminant levels, as determined in the *Historical Review and Evaluation of Contaminants of Potential Concern* (DOE 2002a). Hereafter, only the VOCs that have been determined to be COPCs will be reported in a table as part of this report. Results for non-COPC analytes can be found in the laboratory reports in Appendix A.

The Northeast Site Area A NAPL remediation operations have been ongoing since startup began on September 26, 2002. Remediation activities will continue until late January 2003. Further discussion of the NAPL remediation at Area A can be found in the *Interim Measures Progress Report for Remediation of Non-Aqueous Phase Liquids at the Northeast Site, October − December 2002*.

Safety and Ecology was the vendor chosen to implement the in situ enhanced bioremediation to control the plume of dissolved contaminants at the Building 100 Area task. This task consists of a year-long pilot test to evaluate the efficiency of the technology followed by implementation of the full-scale plume control. Award of the full-scale plume control option will be dependent on success of the pilot test. Currently the pilot test Remediation Plan for implementing this task is being reviewed by FDEP personnel. Field work is anticipated to begin in March 2003.

Two Environmental Checklists (ECL) recommending categorical exclusions for the Northeast Site Area B NAPL remediation and the Building 100 Area enhanced bioremediation pilot test were prepared in August and September 2002, respectively. The ECLs are being evaluated by DOE and decisions are expected early in the next quarter.

1.5 Waste Minimization and Pollution Prevention

Based on the Federal Pollution Prevention Act, waste minimization efforts at the STAR Center are to be documented and reported annually. To date, several significant waste minimization and pollution prevention activities have been successful. These include the following:

- Used hydraulic oil is recycled,
- Drums of deactivated carbon from the Northeast Site NAPL treatment system are shipped to a carbon regeneration facility.
- The sludge byproduct from the Northeast Site ground water treatment process, generated at a rate of about 100 tons/year, has been eliminated completely through the use of a chemical additive that keeps iron and calcium carbonate in solution and prevents these compounds from fouling the air stripper.
- As a result of the elimination of sludge-generating activities, the Northeast Site treatment system was substantially reduced in size. Several tank systems and the metal framework were recycled during this activity.
- A general clean-up activity at the site resulted in the off-site disposal of many small containers of paint, epoxy, lubricating oil, and other industrial products no longer of use at the site.

During construction of the Northeast Site NAPL treatment system, the subcontractor used crushed recycled concrete for the lay-down area and recycled asphalt as road base. These reuse activities saved money for the subcontractor and disposal costs for the generator.

1.6 Quarterly Site Activities

Stoller personnel conducted the following tasks at the STAR Center to fulfill the requirements of the scope of work for annual sampling:

- Obtained water-level measurements from all accessible monitoring wells, recovery wells, and ponds on October 7−8, 2002.
- Conducted the quarterly sampling event in October 2002. This included collecting water samples from 128 monitoring and recovery wells. VOC samples were collected at 66 wells. Sampling for RCRA metals was conducted at 71 Building 100 Area wells. Arsenic sampling was conducted at 16 WWNA wells and Floridan wells PIN12−0527 and 0528.
- Reported the results of quarterly sampling events (this document).

2.0 Water-Level Elevations

2.1 Work Conducted and Methods

Within a 24-hour period on October 7-8, 2002, depth-to-water measurements were taken at all accessible monitoring wells and extraction wells at the STAR Center. The water levels were measured with an electronic water-level indicator with the exception of some of the ponds, which are measured with gauging stations. Ground water and surface-water elevations are listed in Table 2.

2.2 Ground Water Flow

Ground water and surface-water elevations were used to construct sitewide ground water contour maps of the shallow and deep surficial aquifers (Plates 1 and 2, respectively). Individual contour maps were also constructed for the shallow and deep surficial aquifers at the Northeast Site and the Building 100 Area (Figure 3 through Figure 6, respectively). All data points were honored when constructing the interpretive contours.

The water levels throughout the STAR Center indicate that the water table is highest in the north-central and west-central parts of the site (Plates 1 and 2). As ground water flows from this recharge area, it essentially disperses to the west, east, and southeast. These flow patterns are similar for both the shallow and deep surficial aquifers, and are consistent with previously observed flow patterns.

At the Northeast Site, ground water flow patterns, especially in the deep surficial aquifer, are greatly affected by withdrawals from eight active recovery wells. Three recovery wells in the northern part of the site were abandoned in April 2002 as part of NAPL treatment activities. The cones of depression resulting from the pumping of the active recovery wells are particularly evident on Figure 4. Interpretative zones of influence in the north part of the Northeast Site (i.e., the NAPL treatment area) are shown on Plates 1 and 2. The overall influence of the recovery wells in the deep surficial aquifer extends from beyond the East Pond to near the west fence, and from the slurry wall to beyond the south fence (Plate 2).

Along the northern boundary of the Northeast Site, the contours near the slurry wall indicate that the wall continues to be a significant barrier to ground water flow. As seen on Figure 4, there is a differential of almost 4.5 ft between the downgradient and upgradient sides of the wall as measured in monitoring wells PIN15−M24D and −M33D. This differential is consistent with the historical range of about 2-5 ft and continues to suggest that only a minimal amount of ground water recharge to the deep surficial aquifer is derived from the pond. Otherwise, the differential between these two wells would be smaller and the ground water gradient would be steeper near the pond, indicating recharge to the ground water system. The flow patterns of the water table immediately west of the East Pond, however, indicate that the pond is recharging the shallow surficial aquifer (Figure 3).

In the shallow surficial aquifer just south of the Northeast Site, the hydraulic gradient was approximately 0.014 feet per foot (ft/ft). Using Darcy's Law, along with approximations of 1 ft/day for hydraulic conductivity and 0.3 for effective porosity, ground water in the southern part of the site is estimated to move about 17 ft/year toward the north (i.e., toward the on-site

extraction wells) under conditions influenced by pumping. This velocity is similar to that estimated in July 2002 (22 ft/year). In the deep surficial aquifer, the radius of influence from the recovery wells is interpreted to extend roughly 140 ft south of the south fence (Figure 4).

In the south-central part of the STAR Center, surficial aquifer flow is influenced by ground water withdrawals from recovery wells PIN12−RW01 and −RW02 in the northwest corner of Building 100 (Figure 5 and Figure 6), and withdrawals from recovery wells PIN18−RW02 and −RW03 at the WWNA. Shallow ground water beneath Building 100 was relatively flat in April 2002, but flowed to the northwest and southeast in both July and October 2002. Shallow ground water at the WWNA flows to the southeast, except where affected by recovery well withdrawals. The hydraulic gradient beyond the influence of pumping at the Building 100 Area was about 0.002 ft/ft. Using the approximations mentioned above, ground water flow velocity in these areas is estimated to be less than 3 ft/year.

Water-level elevations in the three wells screened in the upper part of the Floridan aquifer are presented in Table 3. The elevations in these wells indicate that the potentiometric surface of the Floridan aquifer at the site is essentially flat.

A downward vertical hydraulic differential of approximately 6.4 ft existed between the surficial aquifer wells and Floridan aquifer wells at the Northeast Site. Table 4 illustrates the vertical hydraulic differential. This differential is consistent with the historical range of 5 to 9 ft.

Surface-water elevations were recorded from the East, South, West, and Southwest Ponds at the site and are presented in Table 5. The ponds are hydraulically connected to the shallow surficial aquifer system. The South and Southwest Ponds elevations have always been essentially the same.

3.0 Ground Water Sampling and Analytical Results

3.1 Work Performed

During semiannual sampling in October 2002, ground water samples were collected from 128 monitoring and recovery wells. Sixty-six samples were analyzed for VOCs using EPA Method 8021. Seventy-one samples were analyzed for RCRA metals including arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver. Mercury was analyzed using EPA Method 7470, the other metals were analyzed using EPA Method 6010. Eighteen additional samples were analyzed for arsenic using EPA Method 6010. Laboratory reports are provided in Appendix A.

During the period of October 1 to December 31, 2002, the remediation system influent and effluent at the Northeast Site, as well as selected recovery wells at the Northeast Site, were also sampled. Analytical results for remediation system VOCs, iron, and hardness (as $CaCO_3$) sampling are provided in Appendix B. Laboratory reports for the WWNA analyses are provided in Appendix C.

All samples were collected in accordance with the Stoller *Sampling Procedures for the Young - Rainey STAR Center* (DOE 2002b), using FDEP procedures. All samples collected were submitted to Severn Trent Laboratories (STL) for analysis. STL is accredited by the Florida

Department of Health in accordance with the National Environmental Laboratory Accreditation Conference, certification number E84282. The majority of monitoring wells were micropurged using a dedicated bladder pump, and sampling was performed when the field measurements stabililized. The remaining wells were conventionally purged with a peristaltic pump or a 2-inch diameter stainless-steel submersible pump; purging was considered complete once field measurements had stabilized. Extraction wells were sampled using their associated flowlines with dedicated sampling ports. Table 6 lists field measurements of pH, specific conductance, dissolved oxygen, oxidation-reduction potential, turbidity, and temperature recorded at the time the sample was collected. Measurements were made with a flow cell and a multiparameter instrument.

3.2 Analytical Results

3.2.1 Northeast Site (PIN15)

Concentrations of COPC in samples collected from wells at the Northeast Site (PIN15) are included in Table 7, which shows the previous four quarters of data for comparison purposes. Figure 7 shows the total COPCs (TCOPCs) concentrations.

No COPCs were detected in the 16 monitoring wells listed below:

PIN15-0506	PIN15-0520	PIN15-M03D	PIN15-M29S
PIN15-0507	PIN15-0530	PIN15-M03S	PIN15-M30S
PIN15-0515	PIN15-0534	PIN15-M27S	PIN15-M32D
PIN15-0516	PIN15-0559	PIN15-M29D	PIN15-M32S

The 19 monitoring and recovery wells listed below contained detectable COPCs:

PIN15-0514	PIN15-0538	PIN15-M31D	PIN15-RW11	PIN15-RW15
PIN15-0535	PIN15-0557	PIN15-M31S	PIN15-RW12	PIN15-RW16
PIN15-0536	PIN15-M27D	PIN15-M34D	PIN15-RW13	PIN15-RW17
PIN15-0537	PIN15-M30D	PIN15-RW06	PIN15-RW14	

TCOPCs concentrations ranged from below detection limit to 388,000 micrograms per liter (µg/L). Well PIN15–RW06 contained the highest TCOPC value, and the COPC compound detected at the highest concentration was methylene chloride at 170,000 µg/L.

3.2.2 Building 100 Area (PIN12)

TCOPCs concentrations in samples collected from wells sampled at the Building 100 Area are included in Table 8, which also shows the previous four quarters of data for comparison purposes. Figure 8 shows the TCOPCs concentrations. Table 9 lists the metals concentrations.

No COPCs were detected in the 14 monitoring wells listed below:

PIN12-0517	PIN12-S69B	PIN12-S72B	PIN12-S73B	PIN21-0504
PIN12-0518	PIN12-S69C	PIN12-S72C	PIN21-0502	PIN21-0505
PIN12-S68B	PIN12-S69D	PIN12-S72D	PIN21-0503	

Samples from the 17 monitoring wells listed below contained COPCs at detectable levels. They are:

PIN12−0513	PIN12−0525	PIN12−S70B	PIN12−S71C	PIN21−0512
PIN12−0514	PIN12−0526	PIN12−S70C	PIN12−S71D	
PIN12−0523	PIN12−S68C	PIN12−S70D	PIN12−S73C	
PIN12−0524	PIN12−S68D	PIN12−S71B	PIN12−S73D	

TCOPCs concentrations ranged from below detection limits to 427 µg/L. The TCOPC compound detected at the highest concentration was cis-1,2-DCE at 360 µg/L in PIN12−0524.

Floridan aquifer wells PIN12−0527, −0528, and PIN15−0513 were not sampled for VOCs this quarter; however PIN12−0527 and −0528 were sampled for arsenic, and none was detected.

3.2.3 Wastewater Neutralization Area (PIN18)

No PIN18 samples were analyzed for VOCs this quarter. Arsenic samples were collected from 16 wells. One well, PIN18−0504 was inadvertently sampled twice. Concentrations of COPCs from quarterly sampling are listed in Table 10 and TCOPCs (this quarter only for arsenic and vinyl chloride) are shown in Figure 9. The highest concentration of arsenic detected was 450 µg/L in PIN18−0501 (note that the units for arsenic have changed from mg/L to µg/L so that TCOPCs for this area could be calculated using consistent units).

3.3 Quality Assurance/Quality Control

Stoller checked the analytical results from STL for quality assurance/quality control (QA/QC) through duplicate samples and trip blanks. Detected analytes for VOCs, metals and arsenic analyses for each duplicate sample are listed in Table A−1 (Appendix A). The duplicate sample results were compared and the relative percent differences (RPDs) between the results were calculated. There were four duplicates analyzed for VOCs, four duplicates analyzed for RCRA metals, and one duplicate analyzed for arsenic. A total of 219 duplicate analyses for individual analytes were performed. Only one of the individual analyses failed. Barium in PIN12−S72D did not meet the guidance criterion that the RPDs results should be within the range of ±30 percent when the concentration is greater than 5 times the detection limit. The failure rate was less than 0.5 percent. All other data passed QA/QC criteria at a Class A level, indicating that all data may be used for quantitative and qualitative purposes.

Duplicate samples should be collected at a frequency of one duplicate for every twenty or fewer samples. There were 66 ground water samples analyzed for VOCs, with four duplicate VOC samples collected. There were 71 ground water samples analyzed for RCRA metals, with four duplicate samples. There were 18 ground water samples analyzed for arsenic, with one duplicate sample collected. The duplicate requirements for VOCs, metals, and arsenic were met.

During the quarterly sampling event, eight trip blanks were submitted for analysis. No analytes were detected above the reporting limit.

4.0 Treatment System and Recovery Well Performance

4.1 Northeast Site and Building 100

The Northeast Site ground water treatment system was operational from October 1 through December 31, 2002. However, during this quarter, some system downtime was experienced. During the period of October 29 through November 6, the Northeast Site and Building 100 recovery wells were shutdown to allow SteamTech to discharge treated water to the on-site treatment system. However, on the night of November 5, the treatment system and its associated electrical transfer pumps were flooded due to an increased discharge rate to the treatment system. Subsequently, the treatment system and recovery wells remained off during the period of November 6 through 20 for the replacement of the flooded transfer pumps' electrical motors. Upon completion of motor replacement, the treatment system and recovery wells were restarted on November 20. During December, the system experienced multiple short-term outages. On December 11 and 30, the system was found off with no indication of the reason for failure. On the evening of December 22, the system shut down due to a sitewide power failure. In all cases, the systems were restarted the morning after the failure. The reason for the failures on December 11 and 30 will be investigated further in January.

Table 11 provides a summary of analytical results for samples collected at the Northeast Site treatment system during this quarter. FeRemede® continues to be utilized to effectively control the deposition of iron and hardness salts. The application of sodium hypochlorite as a microbiocide has continued to successfully control biological growth in the air stripper tower.

From October 1 through December 31, 2002, 1,830,987 gallons of ground water were recovered from the Northeast Site and Building 100 recovery wells. The volume of recovered ground water treated by the Northeast Site treatment system since its startup in June 1997 through December 2002 is presented in Chart 1. Charts 2, 3, and 4 present the monthly volume of ground water recovered during October through December 2002 from the Northeast Site recovery wells.

The monthly ground water recovery from October through December 2002 for the Building 100 recovery wells is presented in Charts 5, 6, and 7, respectively.

Total percent on-time for the Northeast Site air stripper tower (AST) is illustrated in Chart 8. On-time for the AST for this quarter was affected by the above-described outages. Historical summary of ground water at the Northeast Site and Building 100 is shown in Appendix D as Table D−1.

Table 12 presents the calculated mass of selected analytes recovered with the Northeast Site treatment system for each month of this reporting period. These monthly results are based on the measured system influent concentration and influent ground water flow.

4.2 Wastewater Neutralization Area

The two recovery wells (PIN18−RW02 and −RW03) continue to each produce approximately 2.5 gallons per minute continuously with an electrical submersible pump set in each well at approximately 12 ft below land surface. The effluent ground water from each well is combined into a common header pipe and discharged into the industrial wastewater-receiving tank at the

IWNF. During this quarter, 630,594 gallons of ground water were recovered from the subsurface. Since start-up on February 26, 2001, both wells have operated continuously. However, the wells experienced a brief outage on the evening of December 22 due to the sitewide power outage. The recovery wells automatically restarted when power was returned that evening.

5.0 Current and Project Work

5.1 Summary

Work for October through December 2002 included sampling of ground water monitoring wells and recovery wells for water quality, flow, and water levels. The treatment system and recovery wells were operated during the entire quarter, except for some short periods of downtime that were described in Section 4.1.

5.2 Project Work Conducted

The Northeast Site treatment system influent and effluent were sampled during the quarter. Treatment system effluent samples were analyzed for VOCs and the effluent discharge volume was recorded to comply with the Pinellas County wastewater permit. In the effluent samples, all volatile organic aromatic concentrations were under the Pinellas County regulatory limit of 50 µg/L.

Maintenance performed during the quarter consisted of routine preventative maintenance and the replacement of flooded electrical motors on each transfer pump.

6.0 Conclusions

The following conclusions are based on the quarterly sampling conducted in October 2002.

- No significant changes in the surficial ground water flow direction or relative potentiometric levels were observed for the prevailing pumping and seasonal recharge conditions. An additional drawdown contour is inferred in the NAPL treatment area due to ground water withdrawals that are part of the operation.

- The highest concentration of COPCs was detected at the Northeast Site well PIN15−RW06.

- The operation of the Northeast Site recovery wells appears to be controlling plume movement along the southern perimeter of the Northeast Site.

- Monitoring of ground water quality data and in situ thermal readings indicate the Northeast Site Area A NAPL remediation continues to operate within design and no loss of steam or vapor has been observed.

7.0 Tasks to Be Performed Next Quarter

The following tasks are expected to be conducted during the next quarterly period (January through March 2003):

- Quarterly sampling activities will occur in early January 2003.
- Monthly and mid-monthly sampling and analysis of ground water will continue in order to provide compliance and system operations data.
- Treatment system optimization will continue as new issues develop.
- Utilization of the dedicated bladder pumps for quarterly sampling using the micropurging technique will continue.
- Assessment of Northeast Site Area A NAPL remediation effectiveness will take place beginning in February and extending through late July 2003.
- Additional plume delineation at the Northeast Site is proposed in late January 2003 with the installation of five ground water monitoring wells in the parking lot and adjacent area south of the Northeast Site.
- Investigate the reason for system failure on December 11 and 30.

8.0 References

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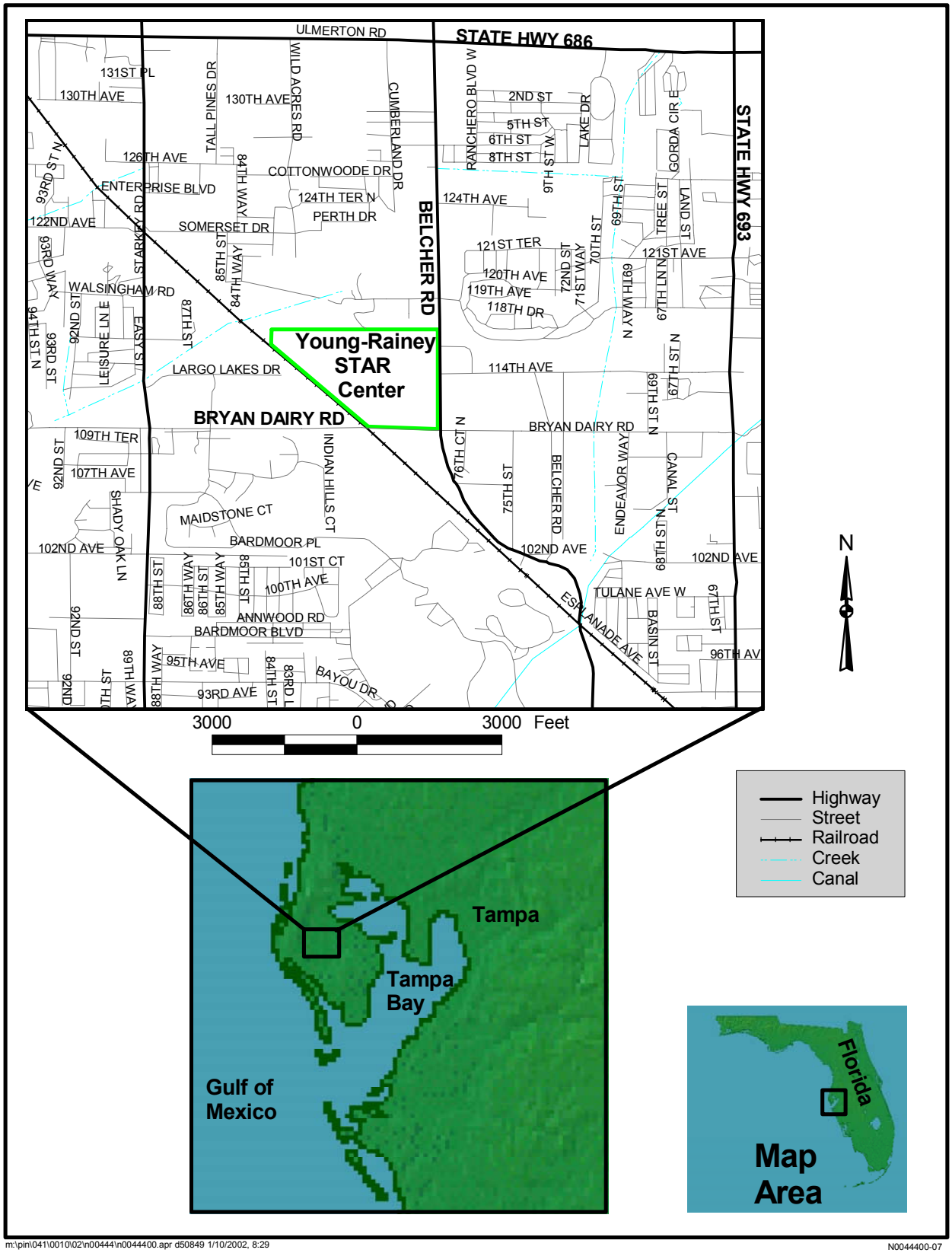

Figure 1. Young - Rainey STAR Center Location

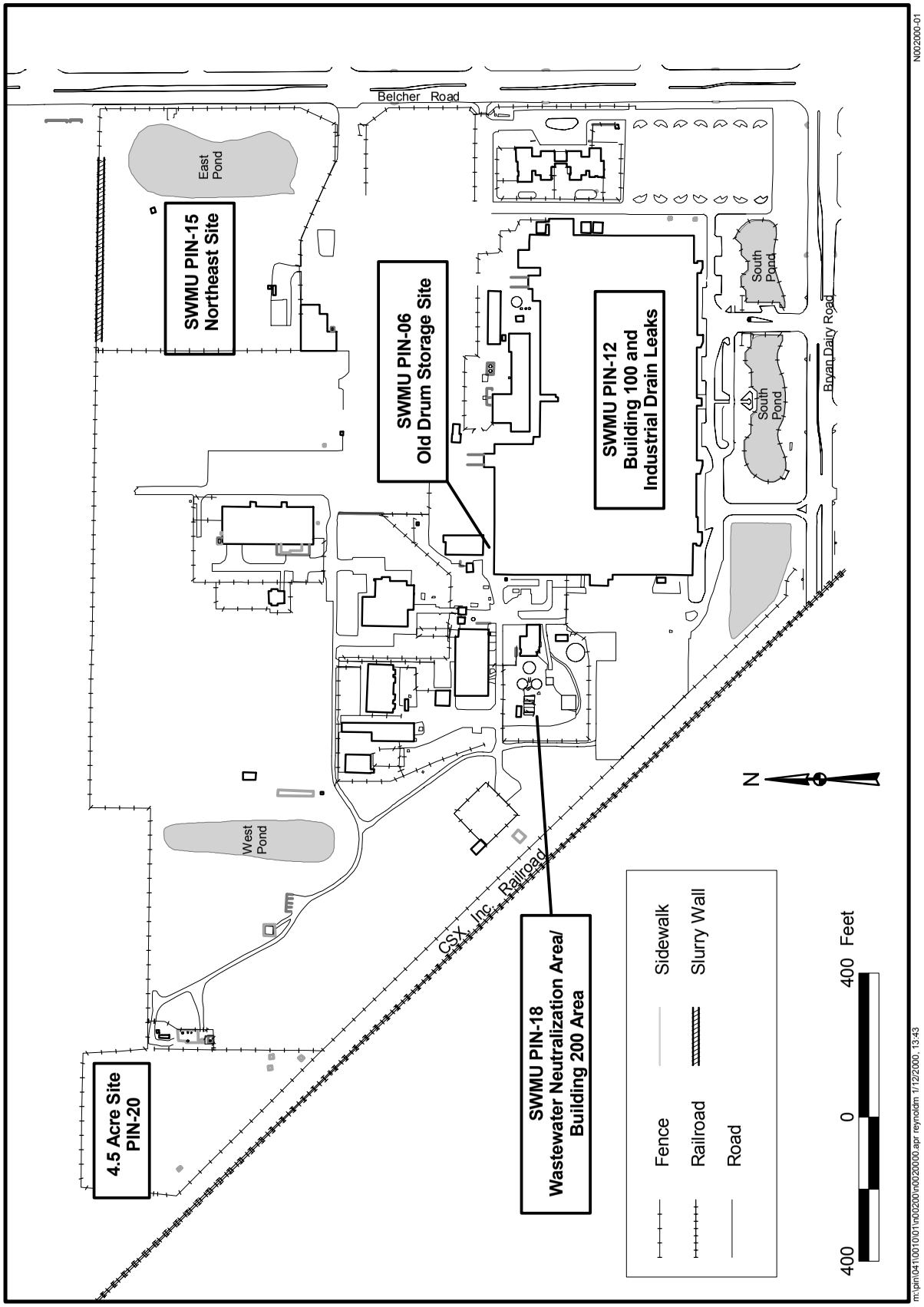

Figure 2. Location of STAR Center Solid Waste Management Units (SWMUs)

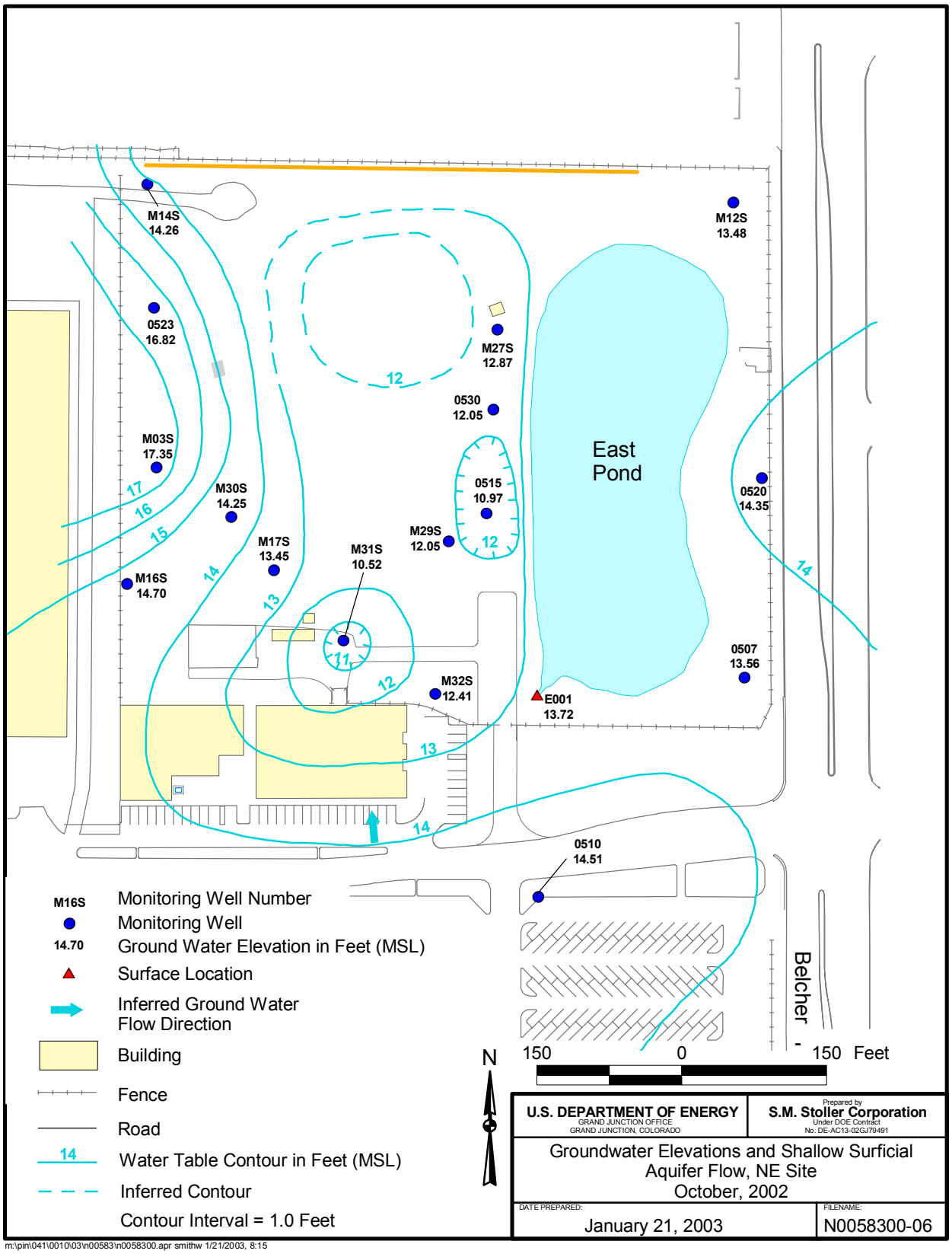

Figure 3. Ground Water Elevations and Shallow Surficial Aquifer Flow, Northeast Site, October 2002

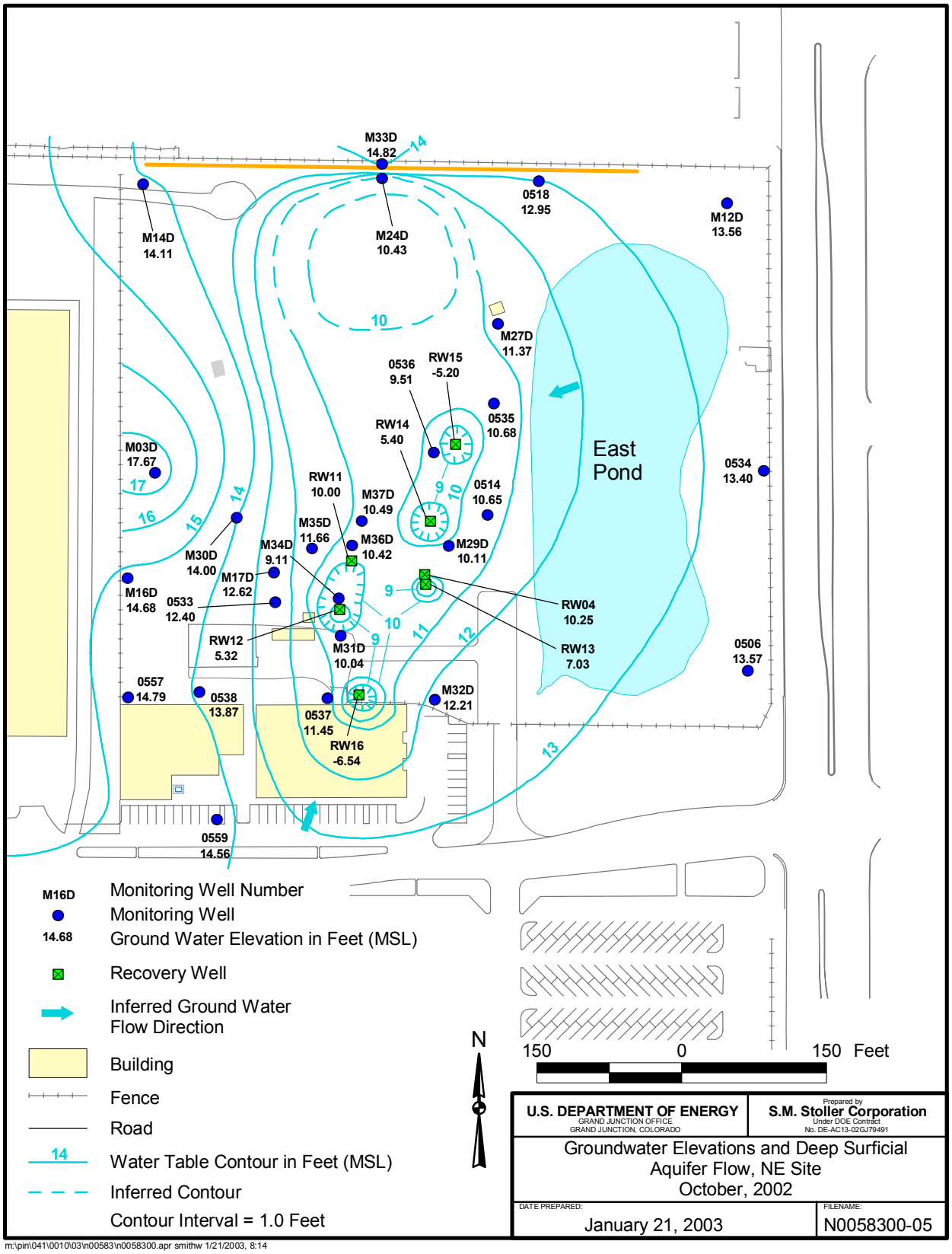

Figure 4. Ground Water Elevations and Deep Surficial Aquifer Flow, Northeast Site, October 2002

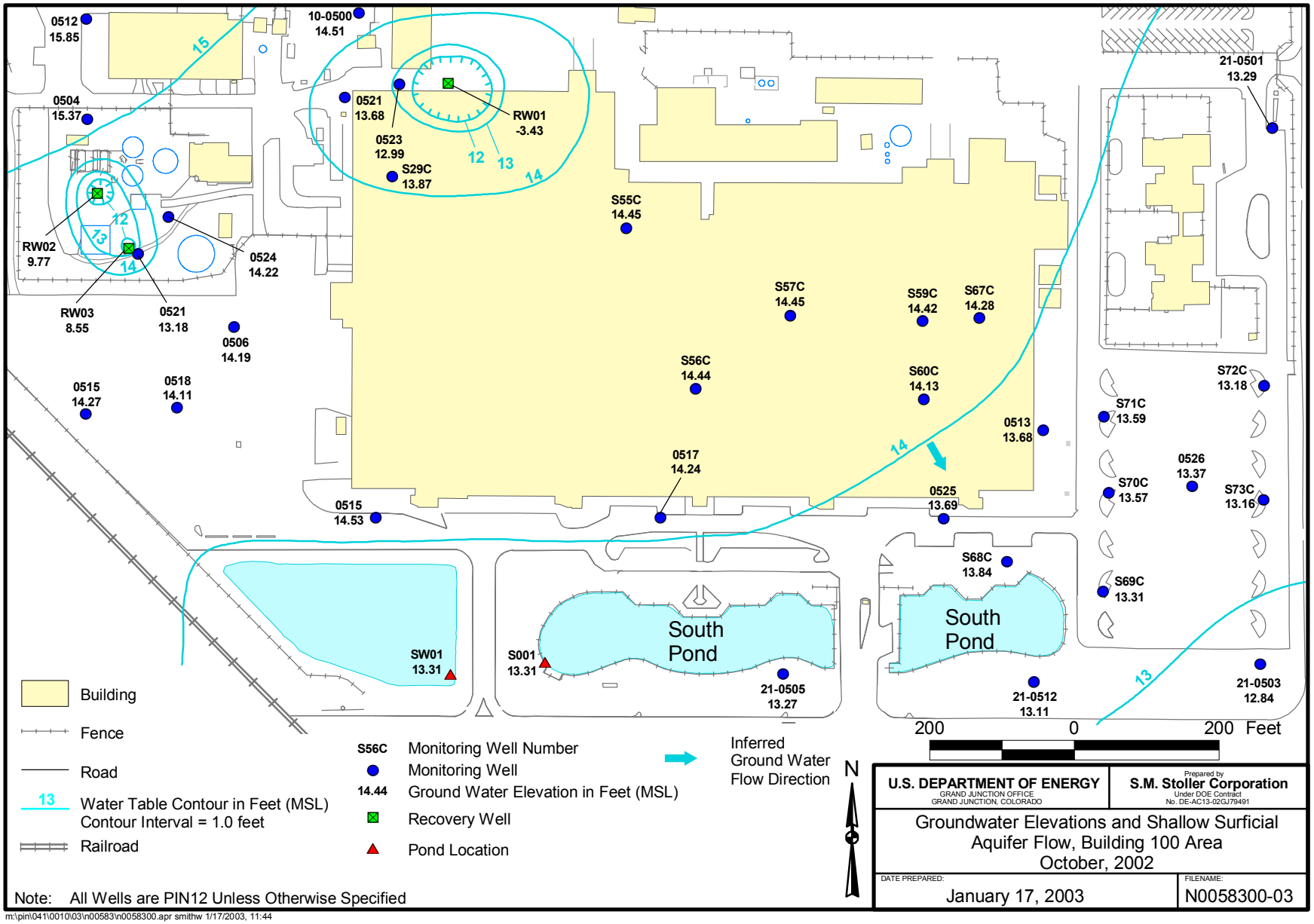

Figure 5. Ground Water Elevations and Shallow Surficial Aquifer Flow, Building 100 Area, October 2002

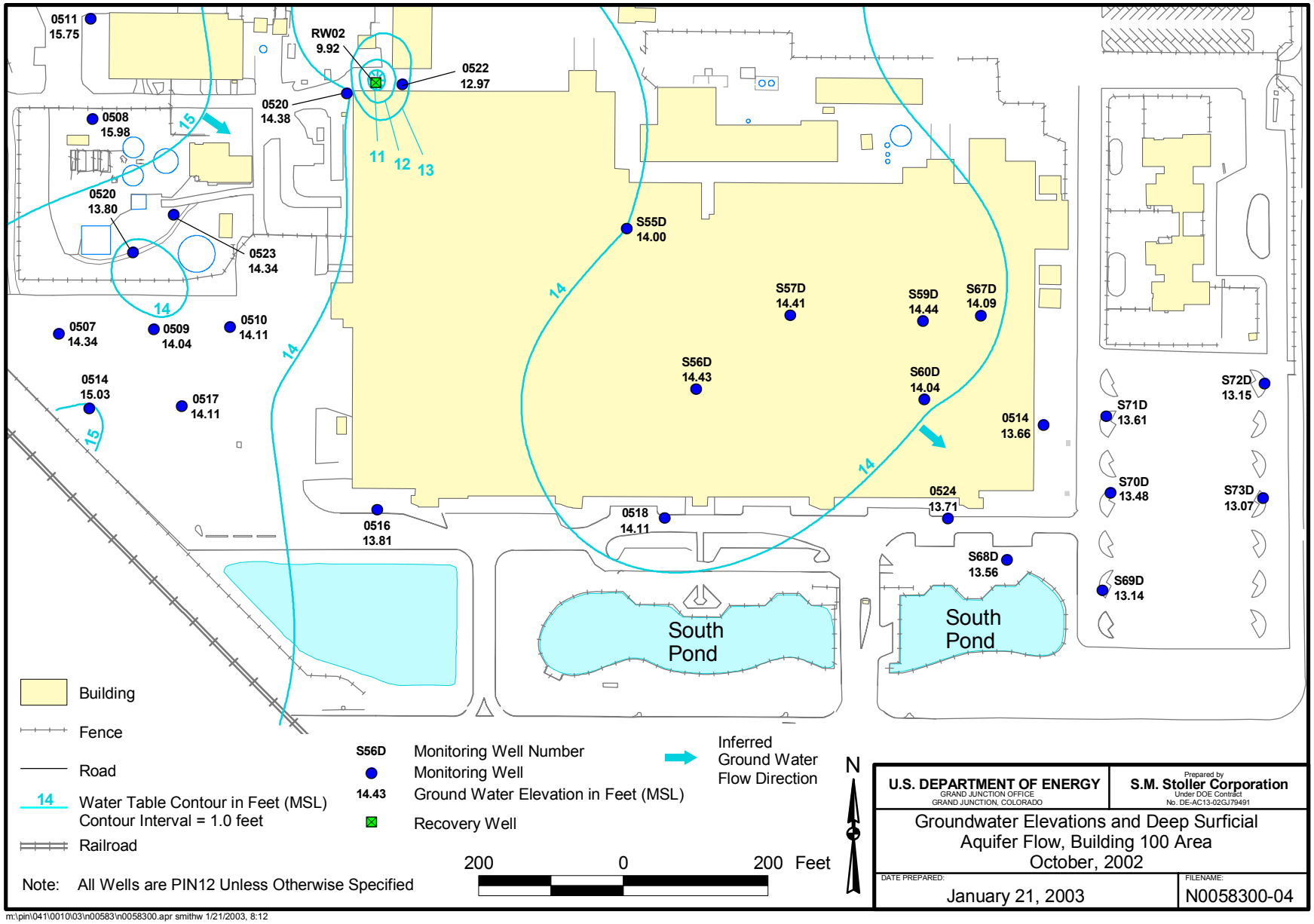

Figure 6. Ground Water Elevations and Deep Surficial Aquifer Flow, Building 100 Area, October 2002

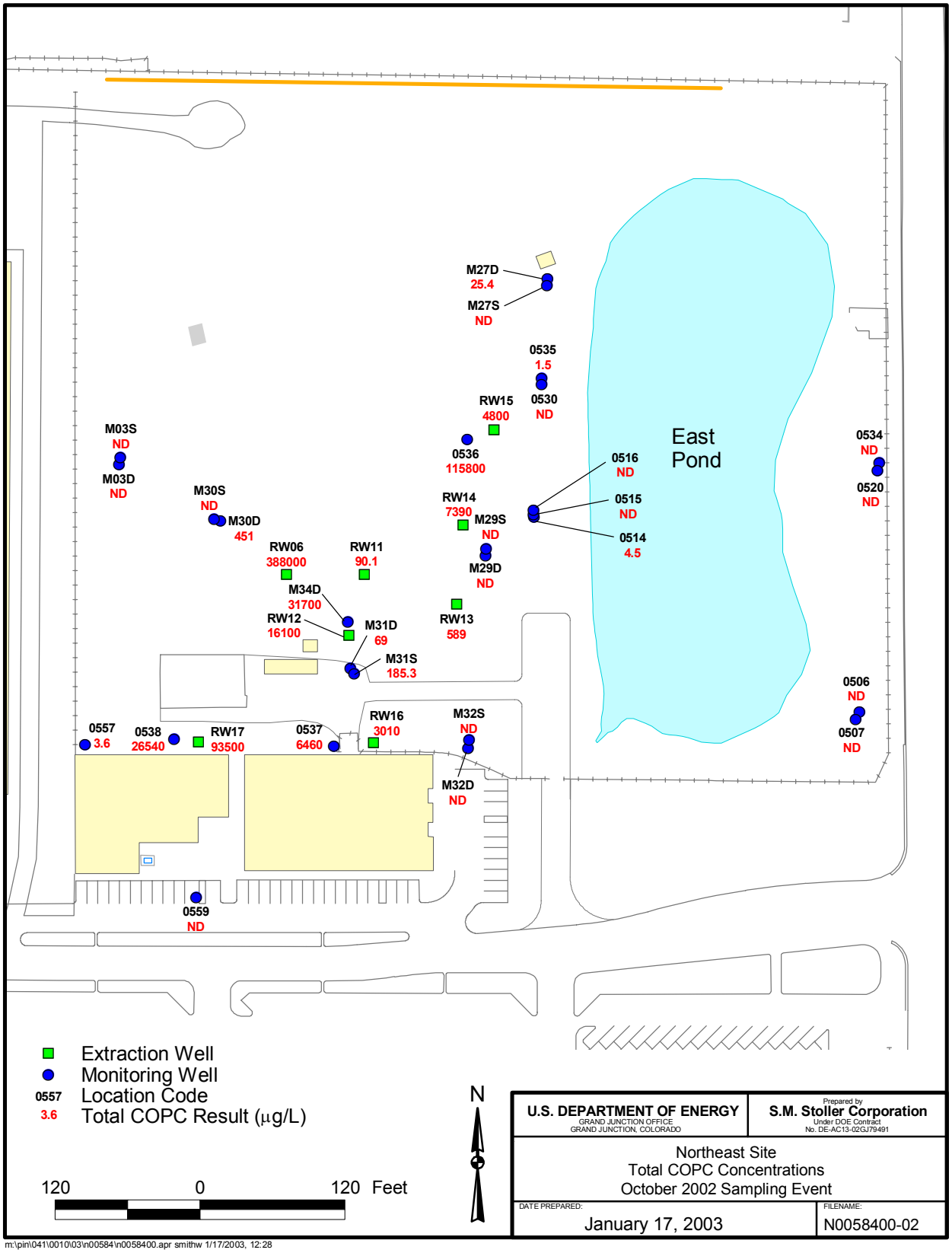

Figure 7. Northeast Site Total COPC Concentrations October 2002 Sampling Event (wells without COPC values or "NDs" were not sampled during this quarter)

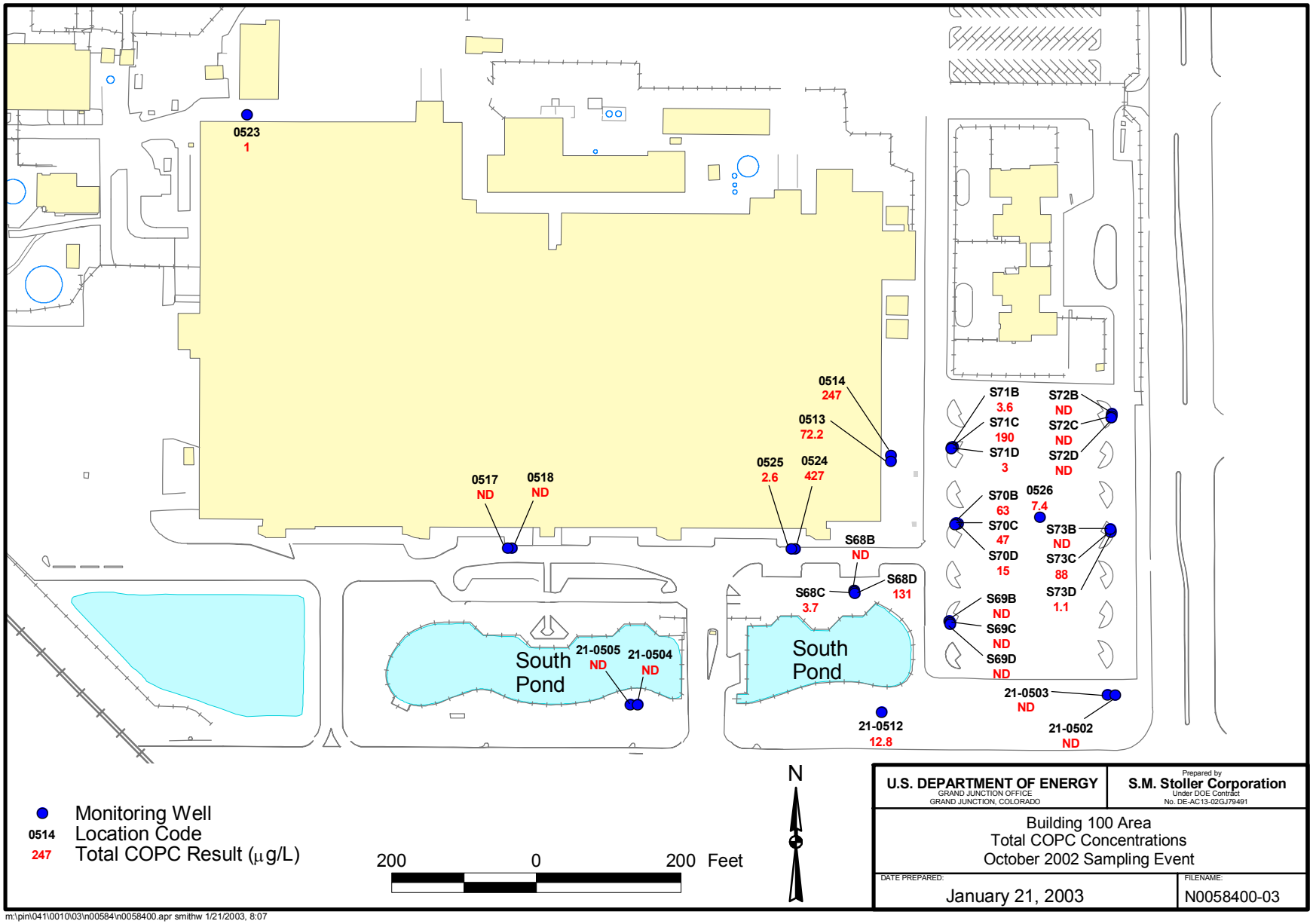

Figure 8. Building 100 Area Total COPC Concentrations October 2002 Sampling Event

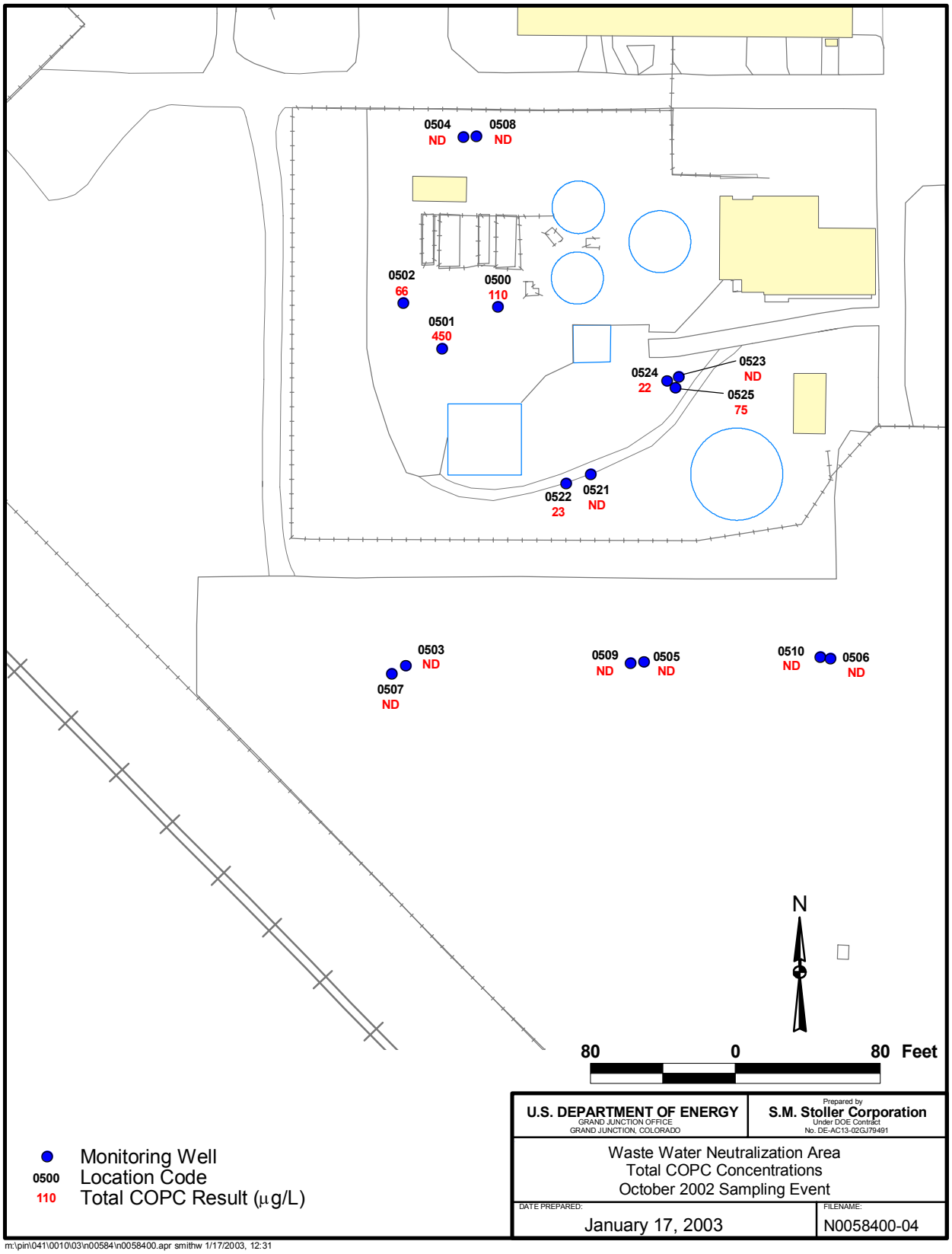

Figure 9. WWNA Total COPC Concentrations October 2002 Sampling Event

Table 1. WWNA Recovery Well Startup Monitoring Arsenic Concentrations (reported in milligrams per liter)

Sample Date	RW02	RW03	RW02/RW03 combined effluent
2/26/2001	0.08	0.1	0.095
2/27/2001	0.074	0.1	0.091
2/28/2001	0.074	0.091	0.074
3/1/2001	0.084	0.096	0.088
3/2/2001	0.088	0.095	0.089
3/5/2001	0.13	0.22	0.1
3/12/2001	0.37	0.11	0.13
3/19/2001	0.42	0.12	0.12
3/26/2001	0.15	0.16	0.8
4/2/2001	0.18	0.12	0.13
4/16/2001	0.18	0.17	0.13
5/1/2001	0.16	0.071	0.1
5/15/2001	0.14	0.15	0.093
5/30/2001	0.13	0.07	0.16
6/11/2001	0.11	0.068	0.083
6/26/2001	0.13	0.067	0.096
7/9/2001	0.14	0.054	0.087
7/23/2001	0.14	0.25	0.074
8/6/2001	0.11	0.2	0.18
8/21/2001	0.13	0.074	0.084
9/5/2001	0.13	0.054	0.091
10/8/2001	0.11	0.14	0.07
11/6/2001	0.095	0.053	0.076
12/7/2001	0.13	0.081	0.084
1/10/2002	0.11	0.081	0.076
2/5/2002	0.11	0.055	0.075
3/6/2002	0.12	0.05	0.076
4/2/2002	0.084	0.055	0.069
4/15/2002	--	0.049	--
4/16/2002	0.078	--	--
5/8/2002	0.11	0.048	0.071
6/4/2002	0.095	0.078	0.058
7/3/2002	0.16	0.056	0.074
7/15/2002	0.098	0.057	--
8/8/2002	0.0036J	0.11	0.065
9/10/2002	0.12	0.097	0.07
10/3/2002	0.097	0.054	0.071
11/22/2002	0.11	0.067	0.057
12/11/2002	0.11	0.056	0.07

-- = Not measured
J = Estimated value, result is between the reporting limit and the method detection limit.

Table 2. Water-Level Data at the STAR Center

Location	Measurement		Water Depth From Land Surface (ft)	Ground Water Elevation (ft NGVD)
	Date	Time		
PIN06	**Old Drum Storage Site**			
0500	10/7/2002	13:26	3.75	14.25
0501	10/7/2002	13:21	5.25	13.05
PIN09	**Incinerator Site**			
0500	10/7/2002	13:30	3.04	14.93
PIN10	**Incinerator Ditch**			
0500	10/7/2002	13:27	3.39	14.51
PIN12	**Industrial Drain Leaks Bldg 100**			
0508	10/7/2002	16:10	3.56	14.80
0509	10/7/2002	16:11	3.41	14.63
0510	10/7/2002	13:10	4.32	13.74
0511	10/7/2002	16:18	3.74	14.06
0512	10/7/2002	16:35	2.79	14.02
0513	10/7/2002	15:04	4.82	13.68
0514	10/7/2002	15:05	4.84	13.66
0516	10/7/2002	15:19	4.19	13.81
0517	10/7/2002	15:12	3.66	14.24
0518	10/7/2002	15:14	3.83	14.11
0520	10/7/2002	13:25	3.63	14.38
0521	10/7/2002	13:25	4.37	13.68
0522	10/7/2002	13:18	5.23	12.97
0523	10/7/2002	13:19	5.17	12.99
0524	10/7/2002	15:09	3.70	13.71
0525	10/7/2002	15:06	3.73	13.69
0526	10/7/2002	16:44	3.45	13.37
0527	10/7/2002	12:50	10.81	7.26
0528	10/7/2002	16:33	10.46	7.14
RW01	10/7/2002	13:14	21.68	-3.43
RW02	10/7/2002	13:23	8.41	9.92
S29C	10/7/2002		4.64	13.87
S30B	10/7/2002	09:13	4.83	13.68
S31B	10/7/2002	14:31	4.34	14.17
S32B	10/7/2002	14:25	4.67	13.84
S33C	10/7/2002	14:20	4.94	13.57
S35B	10/7/2002	13:30	4.54	13.97
S36B	10/7/2002	14:35	4.36	14.15
S37B	10/7/2002	14:15	4.68	13.83
S54D	10/7/2002	13:38	4.39	14.12
S55B	10/7/2002	13:45	4.11	14.40
S55C	10/7/2002	13:46	4.06	14.45
S55D	10/7/2002	13:48	4.51	14.00
S56B	10/7/2002	14:03	4.11	14.40
S56C	10/7/2002	14:05	4.07	14.44
S56D	10/7/2002	14:07	4.08	14.43
S57B	10/7/2002	13:56	4.00	14.51

Table 2 (continued). Water-Level Data at the STAR Center

Location	Measurement		Water Depth From Land Surface (ft)	Ground Water Elevation (ft NGVD)
	Date	Time		
S57C	10/7/2002	13:57	4.06	14.45
S57D	10/7/2002	13:58	4.10	14.41
S59B	10/7/2002	13:10	4.09	14.42
S59C	10/7/2002		4.09	14.42
S59D	10/7/2002	13:13	4.07	14.44
S60B	10/7/2002	13:05	4.36	14.15
S60C	10/7/2002	13:07	4.38	14.13
S60D	10/7/2002	13:07	4.47	14.04
S67B	10/7/2002	14:53	4.25	14.22
S67C	10/7/2002	14:54	4.19	14.28
S67D	10/7/2002	14:55	4.39	14.09
S68B	10/7/2002	16:16	4.42	13.48
S68C	10/7/2002	16:15	4.06	13.84
S68D	10/7/2002	16:18	4.34	13.56
S69B	10/7/2002	16:32	2.74	13.26
S69C	10/7/2002	16:33	2.69	13.31
S69D	10/7/2002	16:34	2.86	13.14
S70B	10/7/2002	16:37	3.12	13.58
S70C	10/7/2002	16:37	3.13	13.57
S70D	10/7/2002	16:38	3.22	13.48
S71B	10/7/2002	16:41	4.81	13.59
S71C	10/7/2002	16:42	4.81	13.59
S71D	10/7/2002	16:43	4.79	13.61
S72B	10/7/2002	16:56	4.99	13.21
S72C	10/7/2002	16:57	5.02	13.18
S72D	10/7/2002	16:58	5.05	13.15
S73B	10/7/2002	16:52	3.69	13.31
S73C	10/7/2002	16:52	3.84	13.16
S73D	10/7/2002	16:53	3.93	13.07
TE03	10/7/2002	16:26	3.91	13.09
PIN15	**Northeast Site**			
0506	10/7/2002	14:17	3.43	13.57
0507	10/7/2002	14:12	3.44	13.56
0510	10/7/2002	12:43	3.01	14.51
0513	10/7/2002	14:11	10.47	7.13
0514	10/7/2002	13:10	6.85	10.65
0515	10/7/2002	13:10	6.53	10.97
0516	10/7/2002	13:09	4.89	12.51
0518	10/7/2002	14:07	4.85	12.95
0520	10/7/2002	14:14	2.85	14.35
0523	10/7/2002	09:07	1.18	16.82
0530	10/7/2002	15:07	5.35	12.05
0533	10/7/2002	15:01	5.60	12.40
0534	10/7/2002	14:14	3.90	13.40
0535	10/7/2002	15:07	6.92	10.68

Table 2 (continued). Water-Level Data at the STAR Center

Location	Measurement		Water Depth From Land Surface (ft)	Ground Water Elevation (ft NGVD)
	Date	Time		
0536	10/7/2002	15:15	8.09	9.51
0537	10/7/2002	14:49	7.15	11.45
0538	10/7/2002	14:50	4.93	13.87
0557	10/7/2002	14:55	4.31	14.79
0559	10/7/2002	12:59	4.23	14.56
E001	10/7/2002	14:42	2.30	13.72
M03D	10/7/2002	08:47	0.43	17.67
M03S	10/7/2002	08:47	0.75	17.35
M12D	10/7/2002	14:09	3.64	13.56
M12S	10/7/2002	14:09	4.02	13.48
M14D	10/7/2002	08:58	3.89	14.11
M14S	10/7/2002	08:57	3.74	14.26
M16D	10/7/2002	14:58	3.52	14.68
M16S	10/7/2002	14:58	3.50	14.70
M17D	10/7/2002	14:59	4.98	12.62
M17S	10/7/2002	14:59	4.05	13.45
M24D	10/7/2002	09:01	7.37	10.43
M27D	10/7/2002	14:03	6.23	11.37
M27S	10/7/2002	14:04	4.73	12.87
M29D	10/7/2002	15:19	7.49	10.11
M29S	10/7/2002	15:19	5.55	12.05
M30D	10/7/2002	14:59	3.90	14.00
M30S	10/7/2002	14:59	3.55	14.25
M31D	10/7/2002	15:23	7.96	10.04
M31S	10/7/2002	15:22	7.48	10.52
M32D	10/7/2002	14:38	5.59	12.21
M32S	10/7/2002	14:38	5.39	12.41
M33D	10/7/2002	09:02	2.78	14.82
M34D	10/7/2002	15:27	8.99	9.11
M35D	10/7/2002	15:30	6.34	11.66
M36D	10/7/2002	15:25	7.38	10.42
M37D	10/7/2002	15:24	7.51	10.49
RW03	10/8/2002	08:37	7.41	10.49
RW04	10/8/2002	08:35	7.35	10.25
RW06	10/8/2002	08:40	8.51	9.49
RW07	10/8/2002	08:36	8.00	9.60
RW10	10/7/2002	15:30	6.59	11.31
RW11	10/7/2002	15:26	8.00	10.00
RW12	10/7/2002	15:28	12.98	5.32
RW13	10/7/2002	15:23	10.57	7.03
RW14	10/7/2002	15:23	12.50	5.40
RW15	10/7/2002	15:17	22.40	-5.20
RW16	10/7/2002	14:45	24.54	-6.54

Table 2 (continued). Water-Level Data at the STAR Center

Location	Measurement		Water Depth From Land Surface (ft)	Ground Water Elevation (ft NGVD)
	Date	Time		
PIN18	**Wastewater Neutralization Area**			
0500	10/7/2002	13:42	7.08	13.02
0501	10/7/2002	13:43	6.10	13.90
0502	10/7/2002	13:44	5.41	14.59
0503	10/7/2002	16:23	3.42	14.26
0504	10/7/2002	13:45	4.23	15.37
0506	10/7/2002	16:19	3.52	14.19
0507	10/7/2002	14:00	3.39	14.34
0508	10/7/2002	13:47	3.52	15.98
0509	10/7/2002	16:22	3.79	14.04
0510	10/7/2002	16:19	3.65	14.11
0511	10/7/2002	13:06	3.05	15.75
0512	10/7/2002	13:05	2.75	15.85
0513	10/7/2002	13:07	2.98	15.82
0514	10/7/2002	16:27	2.75	15.03
0515	10/7/2002	16:26	4.14	14.27
0516	10/7/2002	16:27	4.22	14.19
0517	10/7/2002	16:29	4.14	14.11
0518	10/7/2002	16:29	4.09	14.11
0519	10/7/2002		4.17	14.11
0520	10/7/2002	13:36	4.20	13.80
0521	10/7/2002	13:36	4.92	13.18
0522	10/7/2002	13:37	4.85	13.25
0523	10/7/2002	13:35	5.06	14.34
0524	10/7/2002	13:34	4.78	14.22
0525	10/7/2002	13:33	4.43	14.47
0526	10/7/2002	17:05	3.00	15.60
RW02	10/7/2002	13:40	10.33	9.77
RW03	10/7/2002	13:39	9.75	8.55
PIN21	**Perimeter Monitoring Wells**			
0500	10/7/2002	16:55	4.66	13.44
0501	10/7/2002	16:55	4.71	13.29
0502	10/7/2002	15:37	2.22	12.98
0503	10/7/2002	15:31	2.36	12.84
0504	10/7/2002	15:27	4.41	13.19
0505	10/7/2002	15:26	4.13	13.27
0512	10/7/2002	15:29	4.19	13.11
PIN23	**Southwest Pond**			
SW01	10/7/2002	15:21		13.31
PIN37	**South Pond**			
S001	10/7/2002	15:23		13.31

Table 3. Floridan Aquifer Monitoring Well Water Elevations

Well Identification	Previous Water Level Elevation (ft, MSL)	Current Water Level Elevation (ft, MSL)
PIN15−0513	6.98	7.13
PIN12−0527	6.84	7.26
PIN12−0528	6.83	7.14

Table 4. Vertical Hydraulic Differential

Water Level Measured From	Well Identification	Water Level Elevation (ft, MSL)
Deep Surficial Aquifer	PIN15−M12D	13.56
Floridan Aquifer	PIN15−0513	7.13

Table 5. Surface Water Elevations

Pond Location	Previous Water Level Elevation (ft, MSL)	Current Water Level Elevation (ft, MSL)
East Pond	14.05	13.72
South Pond	9.64[a]	13.31
West Pond	NM	16.10
Southwest Pond	13.67	13.31

[a]Questionable reading
NM = not measured

Table 6. Field Measurements of Samples Collected at the STAR Center

Location	Screen Depth (ft. bls)	Temperature (°C)	Specific Conductance (µmhos/cm)[a]	Turbidity (NTU)	pH	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/L)
PIN06		**Old Drum Storage Site**					
0500	3−13	30.26	609	3.9	6.47	−40	1.03
0501	3−13	28.47	818	3.8	6.34	40	0.86
PIN09		**Incinerator Site**					
0500	3−13	29.99	724	4.1	6.62	−79	0.85
PIN12		**Industrial Drain Leaks Bldg 100**					
0513	15−25	25.49	782	5.8	6.48	−68	0.77
0514	30−40	26.42	1,292	38.3	6.46	−67	0.82
0517	15−25	29.2	591	25.9	6.95	131.9	0.15
0518	30−40	28.2	635	19.7	6.57	−41	0.19
0520	36−46	28.47	1,179	90	6.55	−11	1.32
0521	19.5−29.5	28.67	722	26	6.72	−87	1.41
0523	18−28	27.06	681	67	6.54	−69	0.61
0524	27−37	27.7	1,204	14.4	6.62	83.8	0.27
0525	12−22	28.4	737	3.17	6.81	−108.1	0.17
0526	19.5−29.5	31.7	1,911	16.2	6.58	−89.5	0.17
S29C	14−24	23.09	1,179	12.7	6.81	−92.1	0.18
S30B	5−15	23.18	1,174	4.18	6.7	−84.8	0.19
S31B	5−15	25.65	801	4.3	6.71	−24.6	0.23
S32B	5.5−15.5	22.92	1,138	7.85	6.69	6	0.38
S33C	11−21	23.85	1,178	53.2	6.62	−102	0.15
S35B	5−15	21.99	1,533	21.4	6.49	−39	−−
S36B	5−15	23.46	686	25.5	6.32	−52	0.21
S37B	5−15	22.98	847	9.55	6.72	−99	0.16
S54D	36−41	23.03	1,333	6.41	6.68	−101	−−
S55B	10−19.8	23.75	489	3.66	5.8	−64	−−
S55C	20.5−30.3	23.76	652	2.98	6.63	−132	−−
S56B	10−19.8	22.83	1,520	>1,000	6.83	−139	0.11
S56C	20.5−30.3	22.93	1,534	>1,000	7.03	−141	0.08
S56D	31−40.8	23	1,621	782	7.09	−106	0.21
S57B	10−19.8	23.44	1,291	>500	6.44	−98	−−
S57C	20.5−30.3	23.31	1,039	290	6.64	−144	0.05
S57D	31.5−41.3	23.34	1,454	125	6.77	−81	0.03
S59B	10−19.8	22.27	1,084	11.9	7.09	−101	−−
S59C	20.5−30.3	22.43	951	171	8.76	−80.2	−−
S59D	31−40.8	22.59	1,292	5.44	7.08	−95	−−
S60B	10−19.8	22.98	455	6.9	7.2	−109	−−
S60C	20.5−30.3	23.01	348	755	8.45	−50	−−
S60D	31−40.8	23.18	687	98	8.6	−104	−−
S67B	10−19.83	23.61	1,206	84.1	6.09	−39	0.22
S67C	20−29.83	23.17	1,176	194	6.6	−68	0.18
S67D	30−39.83	23.45	1,288	249	6.72	−77	0.23
S68B	10−20	27.7	924	16.4	6.47	−69.5	0.21
S68C	18−28	27.3	945	>1,000	6.44	−54.4	0.17

Table 6 (continued). Field Measurements of Samples Collected at the STAR Center

Location	Screen Depth (ft. bls)	Temperature (°C)	Specific Conductance (µmhos/cm)[a]	Turbidity (NTU)	pH	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/L)
S68D	30−40	26.4	1,291	12.7	6.63	−80.5	0.46
S69B	10−20	31.15	661	85	6.35	−56	0.4
S69C	20−30	30.16	986	62.7	6.51	−86.5	0.61
S69D	30−40	30.29	1,467	6.52	6.72	−96	0.92
S70B	10−20	29.77	1,646	29.2	6.54	−64	1.48
S70C	20−30	29.71	1,411	839	6.58	−92.6	0.66
S70D	30−40	29.37	1,427	105	6.58	−93.6	0.68
S71B	10−20	30.89	1,344	65.2	6.59	−102.5	0.31
S71C	20−30	29.76	1,470	>1,000	6.53	−103.5	0.82
S71D	30−40	30.04	1,336	20.9	6.61	18.3	1.4
S72B	10−20	31.73	1,541	128	6.27	−61	0.2
S72C	20−30	30.42	728	7.89	6.67	−111	0.35
S72D	30−40	30.6	1,357	820	6.67	−57.5	0.85
S73B	10−20	32.43	869	112	6.66	−86.9	0.47
S73C	20−30	31.55	1,410	174	6.43	−83.1	0.6
S73D	30−40	31.23	1,362	>1,000	6.58	−93.5	0.74
PIN15		**Northeast Site**					
0506	12−21.5	27.44	1,008	48	6.64	−78	0.83
0507	5−14.5	26.97	464	29.6	6.53	−78	0.71
0514	15.5−25.5	25.27	1,594	6.93	6.4	−11.9	0.18
0515	7.6−17.6	27.13	753	3.89	6.74	83.7	0.2
0516	0.3−10.3	28.78	750	0.74	6.84	33.5	0.81
0520	5−14.5	29.03	361	4	6.43	−67	0.81
0530	5−14.5	27.53	562	8.67	6.88	−84.1	0.37
0534	19.5−29	28.42	1,415	48.2	6.56	−43	0.94
0535	20.5−30	25.87	1,721	188	6.54	−54.7	0.12
0536	17.5−27	27.47	1,310	95.6	6.46	−53	0.94
0537	17.5−30	27.09	944	9.87	6.45	−59	1.14
0538	19.5−29	25.38	930	282.5	6.29	−175	1.14
0557	21−31	25.43	975	455	6.55	−147	1.1
0559	22−31.5	28.38	1,113	59	6.59	−71	1.07
M03D	15−25	26.09	1,054	8.7	6.29	−134.1	0.56
M03S	2.5−12	27.51	882	4.5	6.57	−110.4	0.49
M27D	21−31	25.75	1,768	52.5	6.34	−32	0.13
M27S	6−16	28.42	742	0.53	6.72	11.2	0.23
M29D	20−30	26.31	341	5.1	5.91	−58	0.69
M29S	5−15	27.94	964	9.86	6.7	28	1.29
M30D	20.5−30.5	26.47	1,028	60.6	6.36	−93	1.24
M30S	5.5−15.5	27.32	870	0.5	6.57	−46	2.36
M31D	19.5−29.5	28.39	1,123	8.34	6.41	−67	1.32
M31S	4.5−14.5	28.28	1,072	8.64	6.51	−77	1.13
M32D	14−24	27	1,046	9.9	6.43	−85	1.76
M32S	3−13	27.82	715	93	6.67	−9	1.55
M34D	20−30	28.95	1,100	8.21	6.21	−185	1.4
RW11	16.5−31.5	26.19	2,006	77	6.79	−45.2	7.26

Table 6 (continued). Field Measurements of Samples Collected at the STAR Center

Location	Screen Depth (ft. bls)	Temperature (°C)	Specific Conductance (µmhos/cm)[a]	Turbidity (NTU)	pH	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/L)
RW12	14−29	32.14	1,140	161.7	6.39	−116	1.39
RW13	9−29	28.06	963	4.3	6.21	−54	0.96
RW14	8−28	27.13	1,033	5.2	6.28	−64	4.46
RW15	14.5−29.5	26.04	964	332	6.41	124	3.54
RW16	20−30	27.17	1,045	41.4	6.56	−4.5	1.36
RW17	19.5−29.5	25.54	1,127	29.5	6.45	−76	2.37
PIN18		**Wastewater Neutralization Area**					
0500	11−16	26.78	518	35	6.99	−132	0.51
0501	11−16	27.1	952	5.8	6.57	−113	1.98
0502	11−16	27.92	773	5.7	6.65	−64	3.79
0504	13−22	30.44	644	73.4	6.68	−83	2.25
0505	10.5−20.5	24.09	120	25.5	7.5	71.2	8.17
0506	12−22	29.92	541	7.2	6.82	−93	0.82
0508	31−41	26.67	793	15.3	6.36	−81	−−
0509	27.5−37.5	28.6	1,077	38	6.75	−76	0.94
0510	27.5−37.5	28.83	839	97	6.8	−101	0.83
0521	20−30	25.87	860	2.8	6.6	−79	2.68
0522	5−15	27.82	661	38	6.64	−16	2
0523	32.5−42.5	26.33	999	94	6.56	−38	3.09
0524	20−30	26.4	548	16	6.75	−114	1.16
0525	5−15	28.46	457	29	6.56	60	1.78
PIN21		**Perimeter Monitoring Wells**					
0500	7−17	29.67	545	5.82	6.71	−83.1	2.79
0501	20−28	28.85	1,467	8.53	6.5	−117	3.21
0502	7−17	28.19	673	0.4	6.57	−74	1.25
0503	20−28	26.87	720	8.4	6.52	−108	0.95
0504	7−17	25.88	656	10	6.74	−87.7	0.42
0505	20−28	25.15	939	7.08	6.67	−40	0.28
0512	20−29.5	23.8	814	25.5	6.63	−76.8	0.91

[a]Temperature corrected to 25°C
− = Not measured

Table 7. COPC Concentrations at the Northeast Site
(reported in micrograms per liter)

Location	Screen Depth (ft)	Date Sampled	TCE	cis-1,2-DCE	Total 1,2-DCE[a]	Vinyl chloride	Methylene chloride	Benzene	Toluene	Total COPC[b]
FDEP MCL			3	70	63	1	5	1	1,000	
PIN15			**Northeast Site**							
0506	12−21.5	10/3/2001	<1	<1	ND	<1	<5	<1	<1	ND
		4/17/2002	<1	0.14J	0.14J	<1	<5	<1	<1	ND
		10/12/2002	<1	<1	ND	<1	<5	<1	<1	ND
0507	5−14.5	10/3/2001	<1	<1	ND	<1	<5	<1	<1	ND
		4/17/2002	<1	0.15J	0.15J	0.24J	0.37J	<1	<1	ND
		10/12/2002	<1	<1	ND	<1	0.3J	<1	<1	ND
0510	4−13.5	4/17/2002	<1	<1	ND	<1	<5	<1	<1	ND
0513	130−150	4/18/2002	<1	<1	ND	<1	<5	<1	<1	ND
0514	15.5−25.5	10/5/2001	<1	<1	ND	<1	<5	1	<1	1
		1/8/2002	<1	<1	ND	3	0.32J	7.9	1.6	12.5
		4/17/2002	<1	<1	ND	<1	1.4J	<1	<1	ND
		7/12/2002	<1	<1	ND	<1	0.47JB	<1	<1	ND
		10/13/2002	<1	<1	ND	<1	0.4JB	4.5	0.34J	4.5
0515	7.6−17.6	10/5/2001	<1	<1	ND	<1	<5	<1	<1	ND
		1/8/2002	<1	<1	ND	<1	<5	<1	<1	ND
		4/17/2002	<1	<1	ND	<1	1J	<1	<1	ND
		7/12/2002	<1	<1	ND	<1	0.34JB	<1	<1	ND
		10/13/2002	<1	<1	ND	<1	0.62JB	<1	<1	ND
0516	0.3−10.3	10/5/2001	<1	<1	ND	<1	<5	<1	<1	ND
		1/8/2002	<1	<1	ND	<1	1.3J	<1	<1	ND
		4/17/2002	<1	<1	ND	<1	<5	<1	<1	ND
		7/12/2002	<1	<1	ND	<1	0.35JB	<1	<1	ND
		10/13/2002	<1	<1	ND	<1	0.77JB	<1	<1	ND
0518	23−28	4/18/2002	<1	<1	ND	<1	<5	<1	<1	ND
0520	5−14.5	10/3/2001	<1	<1	ND	<1	<5	<1	<1	ND
		4/17/2002	<1	<1	ND	<1	<5	<1	<1	ND
		10/12/2002	<1	<1	ND	<1	0.31J	<1	<1	ND
0523	5−14.5	4/18/2002	<1	<1	ND	<1	<5	<1	<1	ND
0530	5−14.5	10/5/2001	<1	<1	ND	<1	<5	<1	<1	ND
		1/8/2002	<1	<1	ND	<1	1.5J	<1	<1	ND
		4/17/2002	<1	<1	ND	<1	<5	<1	<1	ND
		7/12/2002	<1	<1	ND	<1	<5	<1	<1	ND
		10/13/2002	<1	<1	ND	<1	0.73JB	<1	<1	ND
0531	5−14.5	4/19/2002	<1	<1	ND	<1	0.76J	<1	<1	ND
0533	19.5−29.5	4/19/2002	7,800	16,000	16,000	560	140J	<250	<250	24,360
0534	19.5−29	10/3/2001	<1	<1	ND	<1	<5	<1	<1	ND
		4/17/2002	<1	0.19J	0.19J	<1	<5	<1	<1	ND
		10/12/2002	<1	<1	ND	<1	<5	<1	<1	ND

Table 7 (continued). COPC Concentrations at the Northeast Site (reported in micrograms per liter)

Location	Screen Depth (ft)	Date Sampled	TCE	cis-1,2-DCE	Total 1,2-DCE[a]	Vinyl chloride	Methylene chloride	Benzene	Toluene	Total COPC[b]
FDEP MCL			3	70	63	1	5	1	1,000	
0535	20.5−30	10/5/2001	<1	<1	ND	<1	<5	1.2	0.8J	1.2
		1/8/2002	0.13J	0.73J	0.73J	<1	<5	1.5	1	2.5
		4/17/2002	<1	<1	ND	<1	<5	2	0.88J	2
		7/12/2002	<1	<1	ND	<1	<5	1.9	0.66J	1.9
		10/13/2002	<1	<1	ND	<1	1.4JB	1.5	0.27J	1.5
0536	17.5−27	10/9/2001	120,000	54,000	54,000	<2,500	<12,000	<2,500	<2,500	174,000
		1/9/2002	110,000	32,000	32,000	1,800J	<12,000	<2,500	<2,500	142,000
		4/19/2002	110,000	15,000	15,000	560J	<5,000	<1,000	<1,000	125,000
		7/12/2002	69,000	5,700	5,700	<2,500	1,600JB	<2,500	<2,500	74,700
		10/14/2002	110,000	5,800	5,800	<2,500	2,500JB	<2,500	<2,500	115,800
0537	17.5−30	10/5/2001	<250	11,000	11,000	<250	<1,200	<250	<250	11,000
		1/10/2002	29J	7,800	7,800	2,100	<250	<250	31J	9,900
		4/18/2002	21J	3,600	3,600	1,800	16J	<50	<50	5,400
		7/11/2002	<100	11,000	11,000	4,800	<500	14J	130	15,930
		10/14/2002	<250	5,600	5,600	860	<1,200	<250	<250	6,460
0538	19.5−29	1/10/2002	<500	11,000	11,000	40,000	<2,500	75J	2,000	53,000
		4/18/2002	<250	2,500	2,500	24,000	<1,200	<250	550	27,050
		7/12/2002	<250	970	970	20,000	<1,200	44J	550	21,520
		10/14/2002	<250	2,000	2,000	24,000	<1,200	25J	540	26,540
0557	21−31	10/5/2001	<1	<1	ND	<1	<5	<1	<1	ND
		4/18/2002	<1	<1	ND	3	<5	<1	<1	3
		10/14/2002	<1	<1	ND	3.6	0.54J	<1	<1	3.6
0558	21.5−31	10/4/2001	<250	<250	ND	27,000	<1,200	<250	<250	27,000
		1/10/2002	<50	<50	ND	4,600	<250	13J	<50	4,600
		4/16/2002	<250	<250	ND	1,500	340J	<250	<250	1,500
0559	22−31.5	10/4/2001	<1	<1	ND	<1	4.5J	0.18J	0.17J	ND
		1/14/2002	1.4	0.55J	0.55J	<1	1.3J	0.12J	0.72J	1.4
		4/17/2002	<1	<1	ND	<1	<5	<1	<1	ND
		7/11/2002	<1	0.5J	0.5J	<1	<5	0.31J	<1	ND
		10/12/2002	<1	<1	ND	<1	<5	<1	<1	ND
M03D	15−25	10/4/2001	<1	<1	ND	<1	<5	2.2	<1	2.2
		4/18/2002	<1	<1	ND	0.61J	<5	<1	<1	ND
		10/15/2002	<1	<1	ND	0.42J	0.92JB	<1	<1	ND
M03S	2.5−12	4/18/2002	<1	<1	ND	<1	<5	<1	<1	ND
		10/15/2002	<1	<1	ND	<1	0.85JB	<1	<1	ND
M12D	22.5−32.5	10/4/2001	<1	<1	ND	<1	<5	<1	<1	ND
		4/18/2002	<1	<1	ND	<1	<5	<1	<1	ND
M12S	5−14.5	4/18/2002	<1	<1	ND	<1	<5	<1	<1	ND
M14D	18.5−28.5	10/4/2001	<1	<1	ND	<1	<5	<1	<1	ND
		4/17/2002	<1	<1	ND	0.91J	<5	<1	<1	ND
M14S	4−14	4/17/2002	<1	<1	ND	<1	<5	<1	<1	ND
M16D	18.5−28.5	10/4/2001	<1	<1	ND	<1	<5	<1	<1	ND
		4/18/2002	<1	<1	ND	<1	<5	<1	<1	ND

Table 7 (continued). COPC Concentrations at the Northeast Site (reported in micrograms per liter)

Location	Screen Depth (ft)	Date Sampled	TCE	cis-1,2-DCE	Total 1,2-DCE[a]	Vinyl chloride	Methylene chloride	Benzene	Toluene	Total COPC[b]
FDEP MCL			3	70	63	1	5	1	1,000	
M16S	5−14.5	10/4/2001	<1	<1	ND	<1	<5	<1	<1	ND
		4/18/2002	<1	<1	ND	<1	<5	<1	<1	ND
M17D	19.5−29.5	4/18/2002	21,000	140,000	140,000	3,800	65,000	<2,500	62,000	291,800
M17S	5−14.5	4/18/2002	10	7.1	7.1	0.61J	1.2J	<1	28	45.1
M24D	20−30	4/18/2002	<1	<1	ND	<1	<5	<1	<1	ND
M27D	21−31	10/8/2001	<1	<1	ND	<1	0.59J	16	2.1	18.1
		1/8/2002	<1	<1	ND	<1	1.3J	10	1.2	11.2
		4/17/2002	<1	<1	ND	<1	<5	21	2.2	23.2
		7/12/2002	<1	<1	ND	<1	<5	18	1.8	19.8
		10/13/2002	<1	<1	ND	<1	1.4JB	23	2.4	25.4
M27S	6−16	10/8/2001	<1	<1	ND	<1	<5	<1	<1	ND
		1/8/2002	<1	<1	ND	<1	0.48J	<1	<1	ND
		4/17/2002	<1	<1	ND	<1	<5	<1	<1	ND
		7/12/2002	<1	<1	ND	<1	<5	<1	<1	ND
		10/13/2002	<1	<1	ND	<1	0.69JB	0.18J	<1	ND
M29D	20−30	10/6/2001	<1	<1	ND	<1	0.55J	<1	<1	ND
		1/9/2002	<1	<1	ND	<1	<5	1	<1	1
		4/17/2002	<1	<1	ND	<1	0.9J	0.9J	<1	ND
		7/12/2002	<1	<1	ND	<1	0.37JB	<1	<1	ND
		10/14/2002	<1	<1	ND	<1	1.1JB	0.36J	<1	ND
M29S	5−15	10/6/2001	<1	<1	ND	<1	0.56J	<1	<1	ND
		1/9/2002	<1	<1	ND	<1	0.39J	<1	<1	ND
		4/17/2002	<1	<1	ND	<1	1.3J	<1	<1	ND
		7/12/2002	<1	<1	ND	<1	0.39JB	<1	<1	ND
		10/14/2002	<1	<1	ND	<1	0.78JB	<1	<1	ND
M30D	20.5−30.5	4/18/2002	<1	<1	ND	2.2	0.87J	<1	<1	2.2
		10/14/2002	<10	71	71	380	4.7J	<10	<10	451
M30S	5.5−15.5	4/18/2002	<2.5	3.8	3.8	41	<12	<2.5	<2.5	44.8
		10/14/2002	<1	<1	ND	0.58J	0.51J	<1	<1	ND
M31D	19.5−29.5	10/5/2001	<2.5	190	190	180	<12	0.53J	0.94J	370
		1/10/2002	<50	3,400	3,400	3,200	63J	<50	34J	6,600
		4/19/2002	<5	180	180	520	<25	11	4.4J	711
		7/12/2002	<5	10	10	280	<25	13	<5	303
		10/14/2002	<1	<1	ND	54	1.7J	15	0.93J	69
M31S	4.5−14.5	10/5/2001	21	10	10	65	<5	2	<1	98
		1/10/2002	<1	0.75J	0.75J	25	<5	3	0.25J	28
		4/19/2002	<1	0.32J	0.32J	8.7	<5	3.2	<1	11.9
		7/12/2002	<1	<1	ND	<1	0.64JB	<1	<1	ND
		10/14/2002	<1	110	110	71	0.91JB	4.3	<1	185.3
M32D	14−24	10/4/2001	<1	<1	ND	<1	<5	0.6J	<1	ND
		1/8/2002	<1	<1	ND	<1	0.67J	0.23J	<1	ND
		4/17/2002	<1	<1	2.2	<1	<5	3.1	<1	5.3
		7/11/2002	<1	<1	ND	<1	<5	<1	<1	ND
		10/14/2002	<1	<1	ND	0.27J	<5	<1	<1	ND

Table 7 (continued). COPC Concentrations at the Northeast Site (reported in micrograms per liter)

Location	Screen Depth (ft)	Date Sampled	TCE	cis-1,2-DCE	Total 1,2-DCE[a]	Vinyl chloride	Methylene chloride	Benzene	Toluene	Total COPC[b]
FDEP MCL			3	70	63	1	5	1	1,000	
M32S	3−13	10/4/2001	<1	<1	ND	<1	<5	<1	<1	ND
		1/8/2002	0.35J	2	2	0.55J	<5	<1	<1	2
		4/17/2002	<1	<1	ND	<1	1.2J	<1	<1	ND
		7/11/2002	<1	<1	ND	<1	<5	<1	<1	ND
		10/14/2002	<1	<1	ND	<1	<5	<1	<1	ND
M33D	20−30	10/5/2001	<1	<1	ND	<1	<5	<1	<1	ND
		4/18/2002	<1	<1	ND	<1	0.35J	<1	<1	ND
M34D	20−30	10/8/2001	<250	65J	65J	5,800	<1,200	46J	100J	5,800
		1/10/2002	<250	9,700	9,700	15,000	<1,200	47J	48J	24,700
		4/19/2002	<500	15,000	15,000	14,000	1,000J	<500	3,400	32,400
		7/12/2002	<2,500	39,000	39,000	21,000	930JB	<2,500	30,000	90,000
		10/14/2002	<2,500	4,300	4,300	21,000	4,000J	380J	6,400	31,700
M35D	20−30	4/19/2002	440,000	310,000	310,000	<100,000	9,000,000	<100,000	170,000	9,920,000
M36D	20−30	4/19/2002	<250	11,000	11,000	15,000	<1,200	210J	25,000	51,000
M37D	20−30	4/19/2002	<100	130	130	5,500	<500	100	2,600	8,330
RW06	11−31	1/11/2002	72,000	61,000	61,000	22,000	520,000	<5,000	43,000	718,000
		4/17/2002	24,000J	42,000	42,000	<25,000	570,000	<25,000	94,000	706,000
		7/14/2002	12,000	48,000	48,000	4,600	120,000	410J	22,000	206,600
		10/15/2002	26,000	110,000	110,000	16,000	170,000	540J	66,000	388,000
RW11	16.5−31.5	10/22/2001	1.9J	560	560	34	3.1J	2.3J	7.9J	594
		1/10/2002	<250	2,700	2,700	6,600	290J	56J	3,000	12,300
		4/17/2002	<50	100	100	880	<250	37J	1,700	2,680
		7/14/2002	320	5,900	5,900	3,600	68J	29J	2,000	11,820
		10/15/2002	<1	0.45J	1.1	39	1.5J	24	26	90.1
RW12	14−29	10/8/2001	730	12,000	12,000	5,600	200J	<500	2,800	21,130
		1/10/2002	250	7,200	7,200	9,300	<1,200	32J	1,300	18,050
		4/17/2002	59J	7,800	7,800	6,200	460J	<250	2,300	16,300
		7/14/2002	310	8,300	8,300	5,100	700J	40J	2,900	16,610
		10/15/2002	130J	5,800	5,800	8,800	660J	34J	1,500	16,100
RW13	9−29	10/8/2001	1000	2,200	2,200	660	59J	14J	160	4,020
		1/10/2002	0.62J	120	120	59	110	9.3	94	392.3
		4/17/2002	<25	110	110	<25	910	23J	120	1,140
		7/14/2002	<10	150	150	99	960	12	87	1,308
		10/15/2002	2.5J	130	130	94	270	14	81	589
RW14	8−28	10/8/2001	26	130	130	400	3.5J	2.4J	17	573
		1/11/2002	430	3,000	3,000	4,900	2,100	29J	550	10,980
		4/17/2002	180	3,000	3,000	4,900	730	27J	310	9,120
		7/14/2002	480	1,500	1,500	2,300	680	14J	200	5,160
		10/15/2002	520	2,500	2,500	3,900	290	18J	180	7,390
RW15	14.5−29.5	10/8/2001	4,200	4,900	4,900	1,100	130J	<100	38J	10,200
		1/11/2002	2,700	2,300	2,338	990	29J	5.9J	14J	6,028
		4/17/2002	1,800	1,300	1,300	590	<120	<25	<25	3,690
		7/14/2002	1,600	1,200	1,200	220	<120	9.8J	140	3,160
		10/15/2002	1,900	1,500	1,500	1,400	<120	8.2J	<25	4,800

Table 7 (continued). COPC Concentrations at the Northeast Site (reported in micrograms per liter)

Location	Screen Depth (ft)	Date Sampled	TCE	cis-1,2-DCE	Total 1,2-DCE[a]	Vinyl chloride	Methylene chloride	Benzene	Toluene	Total COPC[b]
FDEP MCL			3	70	63	1	5	1	1,000	
RW16	20−30	10/22/2001	<50	560	560	1,100	<250	<50	<50	1,660
		1/10/2002	<50	680	680	1,600	<250	<50	<50	2,280
		4/17/2002	<50	27J	27J	1,200	<250	<50	<50	1,200
		7/14/2002	<50	790	790	1,800	<250	8.6J	<50	2,590
		10/15/2002	<50	810	810	2,200	93J	8.8J	<50	3,010
RW17	19.5−29.5	10/22/2001	<1,000	76,000	76,000	25,000	<5,000	<1,000	3,100	104,100
		1/10/2002	<1,000	61,000	61,000	27,000	<5,000	<1,000	1,700	89,700
		4/17/2002	<1	110	110	51	<5	<1	3.4	164.4
		7/14/2002	<1,000	72,000	72,000	22,000	<5,000	<1,000	2,000	96,000
		10/15/2002	<1,000	64,000	64,000	28,000	1,200JB	<1,000	1,500	93,500

[a]Total 1,2-DCE is the sum of cis-1,2-DCE and trans-1,2-DCE.
[b]Total COPC is the sum of the individual COPC concentrations. The cis-1,2-DCE value is not part of the Total COPC value because this value is included in the Total 1,2-DCE value. "J" values are not included in the Total COPC value.

ND = Not detected.
J = Estimated value, result is between the reporting limit and the method detection limit.
B = Analyte also found in method blank.

Table 8. COPC Concentrations at the Building 100 Area
(reported in micrograms per liter)

Location	Screen Depth (ft)	Date Sampled	TCE	cis-1,2-DCE	trans-1,2-DCE	Total 1,2-DCE[a]	1,1-DCE	Vinyl chloride	Total COPC[b]
FDEP MCL			3	70	100	63	7	1	
PIN06			**Old Drum Storage Site**						
0500	3−13	1/16/2002	0.17J	1.1	<1	1.1	<1	<1	1.1
		4/12/2002	0.13J	0.32J	<1	0.32J	<1	<1	ND
		7/16/2002	<1	0.74J	<1	0.74J	<1	<1	ND
0501	3−13	1/16/2002	<1	0.2J	<1	0.2J	<1	<1	ND
		4/12/2002	<1	<1	<1	ND	<1	<1	ND
		7/17/2002	<1	<1	<1	ND	<1	<1	ND
PIN09			**Incinerator Site**						
0500	3−13	1/15/2002	0.25J	0.24J	<1	0.24J	<1	<1	ND
		4/12/2002	<1	<1	<1	ND	<1	<1	ND
		7/16/2002	<1	<1	<1	ND	<1	0.23J	ND
PIN10			**Incinerator Ditch**						
0500	3−13	1/14/2002	0.8J	0.64J	<1	0.64J	<1	<1	ND
		4/12/2002	0.33J	0.61J	<1	0.61J	<1	<1	ND
		7/17/2002	0.33J	0.42J	<1	0.42J	<1	<1	ND
PIN12			**Industrial Drain Leaks Bldg 100**						
0508	3−13	1/16/2002	<1	<1	<1	ND	<1	<1	ND
		4/17/2002	<1	<1	<1	ND	<1	<1	ND
		7/17/2002	<1	0.67J	<1	0.67J	<1	<1	ND
0509	3−13	10/10/2001	<1	0.8J	<1	0.8J	<1	<1	ND
		1/16/2002	44	<1	<1	ND	<1	<1	44
		4/17/2002	<1	<1	<1	ND	<1	<1	ND
		7/17/2002	<1	6	<1	6	<1	3.5	9.5
0510	3−13	10/10/2001	<1	1.1	<1	1.1	<1	3.2	4.3
		1/16/2002	0.22J	0.17J	<1	0.17J	<1	2	2
		4/11/2002	<1	<1	<1	ND	<1	<1	ND
		7/17/2002	<1	<1	<1	ND	<1	0.32J	ND
0511	3−13	1/15/2002	<1	<1	<1	ND	<1	<1	ND
		4/15/2002	<1	<1	<1	ND	<1	<1	ND
		7/13/2002	<1	<1	<1	ND	<1	<1	ND
0512	3−13	1/16/2002	<1	<1	<1	ND	<1	<1	ND
		4/13/2002	<1	<1	<1	ND	<1	<1	ND
		7/13/2002	<1	<1	<1	ND	<1	<1	ND
0513	15−25	10/3/2001	0.18J	15	2.2	17.2	0.45J	24	41.2
		1/9/2002	<1	19	1.9	20.9	0.47J	40	60.9
		4/11/2002	<1	31	2.1	33.1	0.58J	23	56.1
		7/13/2002	<1	16	2	18	0.39J	38	56
		10/14/2002	0.27J	22	2.2	24.2	<1	48	72.2
0514	30−40	10/3/2001	<1	23	23	46	0.3J	33	79
		1/9/2002	<1	61	75	136	0.77J	120	256
		4/11/2002	<2.5	99	130	229	1.2J	97	326
		7/13/2002	<1	58	70	128	0.68J	100	228
		10/14/2002	0.15J	64	63	127	<1	120	247

Table 8 (continued). COPC Concentrations at the Building 100 Area (reported in micrograms per liter)

Location	Screen Depth (ft)	Date Sampled	TCE	cis-1,2-DCE	trans-1,2-DCE	Total 1,2-DCE[a]	1,1-DCE	Vinyl chloride	Total COPC[b]
FDEP MCL			3	70	100	63	7	1	
0515	15–25	10/7/2001	0.13J	<1	<1	ND	<1	<1	ND
		1/15/2002	<1	<1	<1	ND	<1	<1	ND
		4/13/2002	<1	<1	<1	ND	<1	<1	ND
		7/13/2002	<1	<1	<1	ND	<1	<1	ND
0516	30–40	1/15/2002	<1	<1	<1	ND	<1	3.1	3.1
		4/13/2002	<1	<1	<1	ND	<1	<1	ND
		7/13/2002	<1	<1	<1	ND	<1	<1	ND
0517	15–25	1/16/2002	<1	<1	<1	ND	<1	<1	ND
		4/13/2002	<1	<1	<1	ND	<1	<1	ND
		7/13/2002	<1	<1	<1	ND	<1	<1	ND
		10/12/2002	<1	<1	<1	ND	<1	<1	ND
0518	30–40	10/7/2001	<1	<1	<1	ND	<1	1.6	1.6
		1/16/2002	<1	<1	<1	ND	<1	<1	ND
		4/13/2002	<1	<1	<1	ND	<1	<1	ND
		7/13/2002	<1	<1	<1	ND	<1	0.56J	ND
		10/12/2002	<1	<1	<1	ND	<1	0.95J	ND
0520	36–46	10/10/2001	<5	210	<5	210	0.62J	78	288
		1/16/2002	<5	270	<5	270	<5	110	380
		4/12/2002	<5	360	<5	360	1.2J	100	460
		7/16/2002	<2.5	200	<2.5	200	<2.5	78	278
0521	19.5–29.5	10/10/2001	<1	2.7	0.23J	2.7	<1	<1	2.7
		1/16/2002	1.4	1.5	<1	1.5	<1	<1	2.9
		4/12/2002	0.4J	0.82J	<1	0.82J	<1	<1	ND
		7/16/2002	1.2	3.6	0.22J	3.6	<1	1.4	6.2
0522	32–42	10/10/2001	<1	<1	<1	ND	<1	<1	ND
		1/14/2002	0.79J	<1	<1	ND	<1	<1	ND
		4/12/2002	<1	<1	<1	ND	<1	<1	ND
		7/17/2002	<1	<1	<1	ND	<1	<1	ND
0523	18–28	10/10/2001	0.55J	2.5	<1	2.5	<1	1.4	3.9
		1/14/2002	0.55J	1.1	<1	1.1	<1	<1	1.1
		4/12/2002	0.15J	1.1	<1	1.1	<1	0.49J	1.1
		7/17/2002	0.22J	1	<1	1	<1	0.42J	1
		10/10/2002	0.2J	1	<1	1	<1	0.31J	1
0524	27–37	10/6/2001	<10	500	4.1J	500	3.8J	51	551
		1/15/2002	<10	670	8.2	678.2	25	320	1,023.2
		4/13/2002	<10	1,800	110	1,910	430	490	2,830
		7/13/2002	<100	4,700	52J	4,700	230	680	5,610
		10/12/2002	<10	360	4.8J	360	24	43	427
0525	12–22	10/6/2001	<1	4.2	<1	4.2	<1	<1	4.2
		1/15/2002	<1	2.5	<1	2.5	<1	<1	2.5
		4/13/2002	<1	2.2	<1	2.2	<1	<1	2.2
		7/13/2002	<1	2.5	<1	2.5	<1	0.25J	2.5
		10/12/2002	<1	2.6	<1	2.6	<1	0.34J	2.6

Table 8 (continued). COPC Concentrations at the Building 100 Area (reported in micrograms per liter)

Location	Screen Depth (ft)	Date Sampled	TCE	cis-1,2-DCE	trans-1,2-DCE	Total 1,2-DCE[a]	1,1-DCE	Vinyl chloride	Total COPC[b]
FDEP MCL			3	70	100	63	7	1	
0526	19.5−29.5	10/3/2001	<1	5.8	3.4	9.2	<1	2.8	12
		1/16/2002	<1	13	7.9	20.9	<1	8.1	29
		4/13/2002	<1	14	4.8	18.8	<1	3.4	22.2
		7/13/2002	<1	6.8	4.4	11.2	<1	4	15.2
		10/12/2002	<1	3.5	2.1	5.6	<1	1.8	7.4
0527	118−137.6	10/7/2001	<1	<1	<1	ND	<1	<1	ND
		4/15/2002	<1	<1	<1	ND	<1	<1	ND
0528	121−141	10/6/2001	<1	<1	<1	ND	<1	<1	ND
		4/15/2002	<1	<1	<1	ND	<1	<1	ND
RW01	19−29	10/22/2001	5,900	4,000	<250	4,000	31J	510	10,410
		1/14/2002	9,600	5,200	27J	5,200	24J	1,100	15,900
		4/11/2002	9,000	7,200	<250	7,200	<250	400	16,600
		7/15/2002	8,100	4,100	40J	4,100	38J	930	13,130
RW02	25−35	10/10/2001	780	640	65	705	15J	<25	1,485
		1/14/2002	890	800	50	850	7.8J	97	1,837
		4/11/2002	750	840	55	895	18	67	1,730
		7/15/2002	820	600	57	657	18J	66	1,543
S29C	14−24	1/11/2002	<1	1.1	7.7	8.8	<1	120	128.8
		4/16/2002	<2.5	0.32J	3.6	3.6	<2.5	100	103.6
		7/12/2002	<1	<1	3.9	3.9	<1	6.9	10.8
S30B	5−15	1/11/2002	11,000	9,400	240J	9,400	<250	<250	20,400
		4/16/2002	3,800	10,000	150J	10,000	<250	<250	13,800
		7/12/2002	23,000	22,000	1,000	23,000	<250	<250	46,000
S31B	5−15	1/11/2002	1.1	1.3	<1	1.3	<1	<1	2.4
		4/16/2002	0.27J	0.85J	<1	0.85J	<1	<1	ND
		7/12/2002	<1	0.83J	<1	0.83J	<1	<1	ND
S32B	5.5−15.5	1/11/2002	0.36J	16	2.2	18.2	4	9.8	32
		4/16/2002	<1	18	1	19	2.6	5	26.6
		7/12/2002	<1	15	1.8	16.8	5.2	7.7	29.7
S33C	11−21	1/11/2002	7.5J	340	22	362	8.5J	580	942
		4/16/2002	1.8J	230	6.6	236.6	3.5J	520	756.6
		7/13/2002	<10	110	2.3J	110	<10	280	390
S35B	5−15	1/11/2002	44,000	76,000	9,500	85,500	320J	19,000	148,500
		4/15/2002	47,000	110,000	7,800	117,800	<2,500	11,000	175,800
		7/12/2002	36,000	100,000	5,500	105,500	<2,500	6,600	148,100
S36B	5−15	1/11/2002	<1	<1	<1	ND	<1	<1	ND
		4/16/2002	<1	<1	<1	ND	<1	<1	ND
		7/13/2002	<1	<1	<1	ND	<1	<1	ND
S37B	5−15	1/11/2002	0.43J	53	1.2	54.2	<1	46	100.2
		4/16/2002	<5	220	1.2J	220	<5	160	380
		7/12/2002	<10	230	<10	230	<10	45	275
S54D	36−41	1/12/2002	15,000	42,000	250J	42,000	420J	<500	57,000
		4/15/2002	9,900	43,000	<1,000	43,000	<1,000	<1,000	52,900
		7/12/2002	15,000	43,000	77J	43,000	190J	2,000	60,000

Table 8 (continued). COPC Concentrations at the Building 100 Area (reported in micrograms per liter)

Location	Screen Depth (ft)	Date Sampled	TCE	cis-1,2-DCE	trans-1,2-DCE	Total 1,2-DCE[a]	1,1-DCE	Vinyl chloride	Total COPC[b]
FDEP MCL			3	70	100	63	7	1	
S55B	10−19.8	1/12/2002	<50	820	<50	820	<50	5,100	5,920
		4/15/2002	<100	1,800	<100	1,800	<100	11,000	12,800
		7/11/2002	<250	1,800	<250	1,800	<250	8,300	10,100
S55C	20.5−30.3	1/12/2002	<100	6,600	53J	6,600	<100	2,600	9,200
		4/15/2002	<100	9,400	16J	9,400	<100	3,000	12,400
		7/11/2002	<100	1,600	<100	1,600	<100	53J	1,600
S56B	10−19.8	1/12/2002	<1	<1	<1	ND	<1	<1	ND
		4/15/2002	<1	<1	<1	ND	<1	<1	ND
		7/12/2002	<1	<1	<1	ND	<1	<1	ND
S56C	20.5−30.3	1/12/2002	<1	<1	<1	ND	<1	<1	ND
		4/15/2002	<1	<1	<1	ND	<1	<1	ND
		7/12/2002	<1	<1	<1	ND	<1	<1	ND
S56D	31−40.8	1/12/2002	1.3	5.2	0.25J	5.2	<1	1.4	7.9
		4/15/2002	<1	<1	<1	ND	<1	<1	ND
		7/12/2002	<1	<1	<1	ND	<1	<1	ND
S57B	10−19.8	1/12/2002	27	23	<1	23	1.6	10	61.6
		4/15/2002	<1	<1	<1	ND	<1	<1	ND
		7/11/2002	<1	<1	<1	ND	<1	<1	ND
S57C	20.5−30.3	1/12/2002	850J	26,000	460J	26,000	1,300	41,000	68,300
		4/15/2002	21,000	23,000	<1,000	23,000	370J	16,000	60,000
		7/11/2002	31,000	24,000	<1,000	24,000	670J	<1,000	55,000
S57D	31.5−41.3	1/12/2002	3J	100	1.6J	100	5.8	160	265.8
		4/15/2002	7.6	240	1.1J	240	3.5J	580	827.6
		7/11/2002	5.4	190	0.82J	190	4.5	280	479.9
S59B	10−19.8	1/10/2002	<1	0.44J	<1	0.44J	<1	<1	ND
		4/12/2002	<1	0.5J	<1	0.5J	<1	3.7	3.7
		7/11/2002	<1	0.45J	<1	0.45J	<1	<1	ND
S59C	20.5−30.3	1/10/2002	<1	7.4	<1	7.4	<1	12	19.4
		4/12/2002	<1	5.8	<1	5.8	<1	5.4	11.2
		7/11/2002	<1	9.3	<1	9.3	<1	1.2	10.5
S59D	31−40.8	1/10/2002	<1	<1	<1	ND	<1	<1	ND
		4/12/2002	<1	<1	<1	ND	<1	<1	ND
		7/11/2002	<1	<1	<1	ND	<1	<1	ND
S60B	10−19.8	1/10/2002	<1	3.4	<1	3.4	0.54J	<1	3.4
		4/12/2002	<1	5.9	<1	5.9	0.63J	<1	5.9
		7/11/2002	<1	5.8	<1	5.8	0.65J	0.56J	5.8
S60C	20.5−30.3	1/10/2002	<1	<1	<1	ND	<1	<1	ND
		4/12/2002	<1	<1	<1	ND	<1	<1	ND
		7/11/2002	<1	<1	<1	ND	<1	<1	ND
S60D	31−40.8	1/10/2002	<1	<1	<1	ND	<1	<1	ND
		4/12/2002	<1	<1	<1	ND	<1	<1	ND
		7/11/2002	<1	3.8	<1	3.8	0.23J	<1	3.8

Table 8 (continued). COPC Concentrations at the Building 100 Area (reported in micrograms per liter)

Location	Screen Depth (ft)	Date Sampled	TCE	cis-1,2-DCE	trans-1,2-DCE	Total 1,2-DCE[a]	1,1-DCE	Vinyl chloride	Total COPC[b]
FDEP MCL			3	70	100	63	7	1	
S67B	10–19.83	1/10/2002	<10	51	6.1J	51	0.34J	470	521
		4/12/2002	<10	41	1.9J	41	<10	550	591
		7/15/2002	<10	49	5.5J	49	<10	540	589
S67C	20–29.83	1/10/2002	<10	270	47	317	<10	550	867
		4/12/2002	<10	440	64	504	1.4J	240	744
		7/15/2002	<10	600	110	710	5.5J	280	990
S67D	30–39.83	1/10/2002	0.13J	110	27	137	1.4	57	195.4
		4/12/2002	<2.5	100	<2.5	100	<2.5	69	169
		7/15/2002	0.26J	69	28	97	0.82J	75	172
S68B	10–20	4/11/2002	<1	<1	<1	ND	<1	<1	ND
		7/16/2002	<1	0.12J	<1	0.12J	<1	<1	ND
		10/12/2002	<1	0.18J	<1	0.18J	<1	<1	ND
S68C	18–28	4/11/2002	<1	1.6	<1	1.6	<1	1.7	3.3
		7/16/2002	<1	1	<1	1	<1	1	2
		10/12/2002	<1	1.6	<1	1.6	<1	2.1	3.7
S68D	30–40	4/11/2002	<1	50	<1	50	<1	62	112
		7/16/2002	<1	49	0.27J	49	<1	42	91
		10/14/2002	<1	63	0.31J	63	<1	68	131
S69B	10–20	4/10/2002	<1	<1	<1	ND	<1	<1	ND
		7/14/2002	<1	<1	<1	ND	<1	<1	ND
		10/14/2002	<1	0.28J	<1	0.28J	<1	<1	ND
S69C	20–30	4/10/2002	<1	1.1	<1	1.1	<1	<1	1.1
		7/14/2002	<1	<1	<1	ND	<1	<1	ND
		10/14/2002	<1	0.3J	0.2J	0.5J	<1	0.4J	ND
S69D	30–40	4/10/2002	<1	<1	<1	ND	<1	<1	ND
		7/14/2002	<1	<1	<1	ND	<1	<1	ND
		10/14/2002	<1	0.65J	<1	0.65J	<1	<1	ND
S70B	10–20	4/10/2002	<1	30	0.36J	30	<1	16	46
		7/14/2002	<1	28	0.3J	28	<1	20	48
		10/15/2002	<1	32	0.68J	32	<1	31	63
S70C	20–30	4/10/2002	<1	26	5.4	31.4	<1	6	37.4
		7/14/2002	<1	22	6.4	28.4	<1	6.1	34.5
		10/15/2002	<1	25	11	36	0.96J	11	47
S70D	30–40	4/10/2002	<1	7	1.2	8.2	<1	1.2	9.4
		7/14/2002	<1	7.8	2.1	9.9	<1	1.1	11
		10/15/2002	<1	9.3	3.8	13.1	0.19J	1.9	15
S71B	10–20	4/11/2002	<1	<1	<1	ND	<1	<1	ND
		7/13/2002	<1	0.5J	<1	0.5J	<1	<1	ND
		10/15/2002	<1	2.4	1.2	3.6	<1	0.29J	3.6
S71C	20–30	4/11/2002	<1	55	17	72	0.45J	28	100
		7/13/2002	<1	120	69	189	0.23J	42	231
		10/15/2002	<2.5	75	50	125	0.86J	65	190

Table 8 (continued). COPC Concentrations at the Building 100 Area (reported in micrograms per liter)

Location	Screen Depth (ft)	Date Sampled	TCE	cis-1,2-DCE	trans-1,2-DCE	Total 1,2-DCE[a]	1,1-DCE	Vinyl chloride	Total COPC[b]
FDEP MCL			3	70	100	63	7	1	
S71D	30–40	4/11/2002	<1	0.93J	<1	0.93J	<1	<1	ND
		7/13/2002	<1	1.6	<1	1.6	<1	<1	1.6
		10/15/2002	<1	3	0.59J	3	<1	0.71J	3
S72B	10–20	4/9/2002	<1	<1	<1	ND	<1	<1	ND
		7/15/2002	<1	<1	<1	ND	<1	<1	ND
		10/11/2002	<1	<1	<1	ND	<1	<1	ND
S72C	20–30	4/10/2002	<1	<1	<1	ND	<1	<1	ND
		7/15/2002	<1	0.15J	<1	0.15J	<1	<1	ND
		10/14/2002	<1	0.22J	<1	0.22J	<1	<1	ND
S72D	30–40	4/10/2002	<1	<1	<1	ND	<1	<1	ND
		7/15/2002	<1	<1	<1	ND	<1	<1	ND
		10/14/2002	<1	<1	<1	ND	<1	<1	ND
S73B	10–20	4/10/2002	<1	<1	<1	ND	<1	<1	ND
		7/15/2002	<1	<1	<1	ND	<1	<1	ND
		10/14/2002	<1	<1	<1	ND	<1	<1	ND
S73C	20–30	4/10/2002	<1	46	18	64	<1	29	93
		7/15/2002	<1	43	18	61	0.83J	34	95
		10/14/2002	<1	37	18	55	0.63J	33	88
S73D	30–40	4/10/2002	<1	<1	<1	ND	<1	<1	ND
		7/15/2002	<1	0.6J	0.15J	0.75J	<1	0.24J	ND
		10/14/2002	<1	1.1	0.42J	1.1	<1	0.32J	1.1
TE03	–	10/6/2001	<1	<1	<1	ND	<1	<1	ND
		1/16/2002	<1	<1	<1	ND	<1	<1	ND
		4/13/2002	<1	<1	<1	ND	<1	<1	ND
		7/13/2002	<1	0.14J	<1	0.14J	<1	5.6	5.6
PIN21			**Perimeter Monitoring Wells**						
0500	7–17	1/9/2002	<1	<1	<1	ND	<1	<1	ND
		4/9/2002	<1	<1	<1	ND	<1	<1	ND
		7/14/2002	<1	<1	<1	ND	<1	<1	ND
0501	20–28	10/3/2001	<1	1.6	0.12J	1.6	<1	<1	1.6
		1/9/2002	<1	1.8	0.14J	1.8	<1	<1	1.8
		4/9/2002	<1	1.5	<1	1.5	<1	<1	1.5
		7/14/2002	<1	1.1	<1	1.1	<1	<1	1.1
0502	7–17	1/9/2002	<1	<1	<1	ND	<1	<1	ND
		4/13/2002	<1	<1	<1	ND	<1	<1	ND
		7/15/2002	<1	<1	<1	ND	<1	<1	ND
		10/12/2002	<1	<1	<1	ND	<1	<1	ND
0503	20–28	10/3/2001	<1	<1	<1	ND	<1	<1	ND
		1/9/2002	<1	<1	<1	ND	<1	<1	ND
		4/13/2002	<1	<1	<1	ND	<1	<1	ND
		7/15/2002	0.13J	<1	<1	ND	<1	<1	ND
		10/12/2002	<1	<1	<1	ND	<1	<1	ND

Table 8 (continued). COPC Concentrations at the Building 100 Area (reported in micrograms per liter)

Location	Screen Depth (ft)	Date Sampled	TCE	cis-1,2-DCE	trans-1,2-DCE	Total 1,2-DCE[a]	1,1-DCE	Vinyl chloride	Total COPC[b]
FDEP MCL			3	70	100	63	7	1	
0504	7−17	1/9/2002	<1	<1	<1	ND	<1	<1	ND
		4/17/2002	<1	<1	<1	ND	<1	<1	ND
		7/15/2002	<1	<1	<1	ND	<1	<1	ND
		10/16/2002	<1	<1	<1	ND	<1	<1	ND
0505	20−28	10/3/2001	<1	0.14J	<1	0.14J	<1	0.31J	ND
		1/9/2002	<1	<1	<1	ND	<1	<1	ND
		4/17/2002	<1	<1	<1	ND	<1	<1	ND
		7/15/2002	<1	<1	<1	ND	<1	0.21J	ND
		10/16/2002	<1	<1	<1	ND	<1	<1	ND
0512	20−29.5	10/3/2001	<1	2	0.18J	2	<1	4.1	6.1
		1/9/2002	<1	2.8	0.22J	2.8	<1	8.6	11.4
		4/16/2002	<1	2.7	<1	2.7	<1	3.7	6.4
		7/15/2002	<1	1.3	<1	1.3	<1	1.6	2.9
		10/15/2002	4	6.1	0.2J	6.1	<1	2.7	12.8

[a]Total 1,2-DCE is the sum of cis-1,2-DCE and trans-1,2-DCE.
[b]Total COPC is the sum of the individual COPC concentrations. The cis-1,2-DCE and trans-1,2-DCE values are not part of the Total COPC value because these values are included in the Total 1,2-DCE value. "J" values are not included in the Total COPC value.

ND = Not detected.
J = Estimated value, result is between the reporting limit and the method detection limit.
B = Analyte also found in method blank.

Table 9. RCRA Metals in Samples Collected at the STAR Center
(reported in milligrams per liter)

Location	Screen Depth (ft bls)	Date Sampled	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver
PIN06			**Old Drum Storage Site**							
0500	3-13	10/10/2002	0.03	0.068	<0.005	<0.01	0.0043J	<0.0002	<0.01	<0.01
0501	3-13	10/10/2002	0.012	0.081	0.0012J	<0.01	0.0048J	<0.0002	<0.01	<0.01
PIN09			**Incinerator Site**							
0500	3-13	10/10/2002	0.021	0.062	<0.005	<0.01	0.0061	<0.0002	<0.01	<0.01
PIN10			**Incinerator Ditch**							
0500	3-13	10/11/2002	0.013	0.051	0.0083	<0.01	0.0021J	0.00025	<0.01	<0.01
PIN12			**Industrial Drain Leaks Bldg 100**							
0508	3-13	10/11/2002	<0.01	0.049	<0.005	<0.01	0.0025J	<0.0002	<0.01	<0.01
0509	3-13	10/11/2002	<0.01	0.083	<0.005	<0.01	0.0067	<0.0002	<0.01	<0.01
0510	3-13	10/11/2002	0.0032J	0.087	<0.005	<0.01	0.0046J	<0.0002	<0.01	<0.01
0511	3-13	10/11/2002	<0.01	0.017	<0.005	<0.01	0.0026J	<0.0002	<0.01	<0.01
0512	3-13	10/11/2002	0.0062J	0.052	<0.005	<0.01	0.0034J	<0.0002	<0.01	<0.01
0513	15-25	10/14/2002	0.0038J	0.057	<0.005	<0.01	0.0037J	<0.0002	<0.01	<0.01
0514	30-40	10/14/2002	<0.01	0.062	<0.005	<0.01	0.0058	<0.0002	<0.01	<0.01
0515	15-25	10/11/2002	<0.01	0.047	<0.005	<0.01	0.0028J	0.00021	<0.01	<0.01
0516	30-40	10/11/2002	<0.01	0.045	<0.005	<0.01	0.0058	<0.0002	<0.01	<0.01
0517	15-25	10/12/2002	<0.01	0.047	<0.005	<0.01	0.0045J	<0.0002	<0.01	<0.01
0518	30-40	10/12/2002	0.0033J	0.023	<0.005	<0.01	0.0034J	<0.0002	<0.01	<0.01
0520	36-46	10/10/2002	<0.01	0.043	<0.005	0.0077J	0.0064	<0.0002	<0.01	<0.01
0521	19.5-29.5	10/10/2002	<0.01	0.055	<0.005	<0.01	0.0047J	<0.0002	<0.01	<0.01
0522	32-42	10/11/2002	<0.01	0.038	<0.005	0.0036J	0.0063	<0.0002	<0.01	<0.01
0523	18-28	10/10/2002	0.0058J	0.053	<0.005	<0.01	0.0043J	0.00015J	<0.01	<0.01
0524	27-37	10/12/2002	0.0044J	0.058	<0.005	<0.01	0.0051	0.00011J	<0.01	<0.01
0525	12-22	10/12/2002	0.03	0.062	<0.005	<0.01	0.0044J	0.00013J	<0.01	<0.01
0526	19.5-29.5	10/12/2002	0.0054J	0.097	<0.005	<0.01	0.0066	<0.0002	<0.01	<0.01
0527	118-137.9	10/11/2002	<0.01	--	--	--	--	--	--	--
0528	127-146.9	10/11/2002	<0.01	--	--	--	--	--	--	--
S29C	14-24	10/9/2002	0.0038J	0.047	<0.005	<0.01	0.0044J	<0.0002	<0.01	<0.01
S30B	5-15	10/11/2002	0.011	0.07	<0.005	0.0046J	<0.005	<0.0002	<0.01	<0.01
S31B	5-15	10/9/2002	0.016	0.061	<0.005	<0.01	0.0039J	<0.0002	<0.01	<0.01
S32B	5.5-15.5	10/9/2002	0.062	0.093	<0.005	<0.01	0.0058	<0.0002	<0.01	<0.01
S33C	11-21	10/11/2002	0.014	0.085	<0.005	0.014	0.0015J	<0.0002	<0.01	<0.01
S35B	5-15	10/10/2002	0.018	0.59	<0.005	0.013	0.0017J	<0.0002	<0.01	0.003J
S36B	5-15	10/9/2002	0.009J	0.051	<0.005	0.011	0.0039J	<0.0002	<0.01	<0.01
S37B	5-15	10/11/2002	0.0084J	0.065	<0.005	0.0086J	<0.005	<0.0002	0.0043J	<0.01
S54D	36-41	10/10/2002	<0.01	0.038	<0.005	<0.01	<0.005	<0.0002	<0.01	<0.01
S55B	10-19.8	10/10/2002	<0.01	0.037	<0.005	0.014	<0.005	<0.0002	<0.01	<0.01
S55C	20.5-30.3	10/10/2002	<0.01	0.035	<0.005	<0.01	<0.005	<0.0002	<0.01	<0.01
S56B	10-19.8	10/9/2002	0.0096J	0.1	<0.005	0.044	0.011	<0.0002	<0.01	<0.01
S56C	20.5-30.3	10/9/2002	0.0068J	0.16	<0.005	0.044	0.027	0.00016B	<0.01	<0.01
S56D	31-40.8	10/9/2002	0.013	0.2	0.0023J	0.1	0.042	<0.0002	<0.02	0.0034J
S57B	10-19.8	10/9/2002	0.0063J	0.083	<0.005	0.022	0.0077	<0.0002	<0.01	<0.01
S57C	20.5-30.3	10/9/2002	0.0046J	0.078	<0.005	0.016	0.0088	<0.0002	<0.01	<0.01

Table 9 (continued). RCRA Metals in Samples Collected at the STAR Center (reported in milligrams per liter)

Location	Screen Depth (ft bls)	Date Sampled	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver
S57D	31.5-41.3	10/9/2002	<0.01	0.084	<0.005	0.012	0.0096	<0.0002	<0.01	<0.01
S59B	10-19.8	10/10/2002	<0.01	0.04	<0.005	<0.01	0.0038J	<0.0002	<0.01	<0.01
S59C	20.5-30.3	10/10/2002	<0.01	0.05	<0.005	<0.01	0.0036J	0.00025B	<0.01	<0.01
S59D	31-40.8	10/10/2002	<0.01	0.041	<0.005	<0.01	0.0044J	<0.0002	<0.01	<0.01
S60B	10-19.8	10/11/2002	<0.01	0.082	<0.005	0.006J	0.0027J	0.00017J	<0.01	<0.01
S60C	20.5-30.3	10/11/2002	<0.01	0.053	<0.005	<0.01	<0.005	<0.0002	<0.01	<0.01
S60D	31-40.8	10/10/2002	0.0048J	0.084	<0.005	0.0018J	<0.005	<0.0002	0.0061J	<0.01
S67B	10-19.83	10/11/2002	0.0048J	0.061	<0.005	0.012	0.0059	<0.0002	<0.01	<0.01
S67C	20-29.83	10/11/2002	0.0035J	0.066	<0.005	0.0083J	0.0085	<0.0002	<0.01	<0.01
S67D	30-39.83	10/11/2002	0.0052J	0.084	0.00095J	0.044	0.011	<0.0002	<0.01	<0.01
S68B	10-20	10/12/2002	0.074	0.087	<0.005	<0.01	0.0061	<0.0002	<0.01	<0.01
S68C	18-28	10/12/2002	0.016	0.29	0.0015J	0.42	0.049	0.00028	0.0072J	0.0033J
S68D	30-40	10/14/2002	0.0054J	0.055	<0.005	<0.01	0.0063	<0.0002	<0.01	<0.01
S69B	10-20	10/14/2002	0.011	0.047	<0.005	0.0068J	0.0046J	0.00017J	<0.01	<0.01
S69C	20-30	10/14/2002	<0.01	0.042	<0.005	0.0069J	0.004J	<0.0002	<0.01	<0.01
S69D	30-40	10/14/2002	0.0039J	0.05	<0.005	<0.01	0.0054	<0.0002	<0.01	<0.01
S70B	10-20	10/15/2002	0.0048J	0.063	<0.005	0.0047J	0.0067	0.000077J	<0.01	<0.01
S70C	20-30	10/15/2002	0.007J	0.14	<0.005	0.07	0.016	<0.0002	<0.01	<0.01
S70D	30-40	10/15/2002	0.0044J	0.055	<0.005	0.0059J	0.0064	<0.0002	<0.01	<0.01
S71B	10-20	10/15/2002	0.0062J	0.066	<0.005	0.0092J	0.0059	0.00014J	<0.01	<0.01
S71C	20-30	10/15/2002	0.0082J	0.13	<0.005	0.067	0.017	0.00015J	<0.01	<0.01
S71D	30-40	10/15/2002	0.0042J	0.057	<0.005	0.0036J	0.0059	<0.0002	<0.01	<0.01
S72B	10-20	10/11/2002	0.0073J	0.19	<0.005	0.021	0.0075	<0.0002	<0.01	<0.01
S72D	30-40	10/14/2002	0.0089J	0.12	0.0028J	0.11	0.023	0.00011J	<0.01	0.0031J
S73B	10-20	10/14/2002	0.0079J	0.059	<0.005	0.033	0.0093	0.0001J	<0.01	<0.01
S73C	20-30	10/14/2002	0.006J	0.11	<0.005	0.013	0.0081	<0.0002	<0.01	<0.01
S73D	30-40	10/14/2002	0.0041J	0.072	0.00084J	0.063	0.02	<0.0002	<0.02	<0.01
TE03	-	10/11/2002	<0.01	--	--	--	--	--	--	--
PIN21			**Perimeter Monitoring Wells**							
0500	7-17	10/8/2002	<0.01	0.036	<0.005	<0.01	0.0037J	<0.0002	<0.01	<0.01
0501	20-28	10/8/2002	0.0034J	0.073	<0.005	<0.01	0.0051	<0.0002	<0.01	<0.01
0502	7-17	10/12/2002	0.0034J	0.06	<0.005	<0.01	<0.005	<0.0002	<0.01	<0.01
0503	20-28	10/12/2002	0.0033J	0.045	<0.005	0.0029J	<0.005	<0.0002	<0.01	<0.01
0504	7-17	10/16/2002	0.015	0.031	0.0013J	<0.01	0.0029J	<0.0002	<0.01	<0.01
0512	20-29.5	10/15/2002	0.0059J	0.038	<0.005	<0.01	0.0034J	<0.0002	<0.01	<0.01

J = Estimated value, result is between the reporting limit and the method detection limit.
B = Analyte also found in method blank.

Table 10. COPC Concentrations at the Wastewater Neutralization Area (reported in micrograms per liter)

Location	Screen Depth (ft)	Date Sampled	Vinyl chloride	Arsenic	Total COPC[a]
FDEP MCL			1	50	
PIN18			**Wastewater Neutralization Area**		
0500	11−16	10/11/2001	--	120	120
		1/15/2002	--	100	100
		4/16/2002	<1	92	92
		7/16/2002	--	97	97
		10/15/2002	--	110	110
0501	11−16	10/11/2001	--	440	440
		1/15/2002	--	540	540
		4/16/2002	<1	700	700
		7/16/2002	--	580	580
		10/10/2002	--	450	450
0502	11−16	10/11/2001	--	120	120
		1/15/2002	--	67	67
		4/16/2002	<1	60	60
		7/16/2002	--	74	74
		10/10/2002	--	66	66
0503	10−20	4/13/2002	<1	6.8J	ND
		10/11/2002	--	<10	ND
0504	13−22	4/16/2002	<1	<10	ND
		10/12/2002	--	4.6J	ND
		10/14/2002	--	<10	ND
0505	10.5−20.5	10/6/2001	--	<10	ND
		4/13/2002	<1	5.6J	ND
		10/15/2002	--	<10	ND
0506	12−22	4/13/2002	<1	4.1J	ND
		10/12/2002	--	<10	ND
0507	27−37	4/13/2002	<1	<10	ND
		10/11/2002	--	<10	ND
0508	31−41	10/11/2001	--	<10	ND
		4/16/2002	<1	<10	ND
		10/10/2002	--	<10	ND
0509	27.5−37.5	4/13/2002	<1	<10	ND
		10/12/2002	--	<10	ND
0510	27.5−37.5	4/13/2002	<1	3.7J	ND
		10/12/2002	--	3.8J	ND
0511	32−42	4/16/2002	<1	<10	ND
0512	21−31	4/16/2002	<1	<10	ND
0513	12−22	4/16/2002	<1	<10	ND
0514	32.5−42.5	4/13/2002	<1	4.7J	ND
0515	22.5−32.5	4/15/2002	<1	<10	ND
0516	12.5−22	4/15/2002	<1	4.2J	ND
0517	31.5−41.5	4/13/2002	<1	<10	ND
0518	22.5−32.5	4/13/2002	<1	3.8J	ND

Table 10 (continued). COPC Concentrations at the Wastewater Neutralization Area (reported in micrograms per liter)

Location	Screen Depth (ft)	Date Sampled	Vinyl chloride	Arsenic	Total COPC[a]
FDEP MCL			1	50	
0519	12.5−22.5	4/13/2002	6.7	4.2J	6.7
0520	32.5−42.5	4/15/2002	<1	<10	ND
0521	20−30	10/11/2001	--	<10	ND
		1/15/2002	--	3.5J	ND
		4/15/2002	<1	4.6J	ND
		7/16/2002	--	<10	ND
		10/10/2002	--	<10	ND
0522	5−15	10/11/2001	--	33	33
		1/14/2002	--	72	72
		4/15/2002	<1	74	74
		7/16/2002	--	37	37
		10/10/2002	--	23	23
0523	32.5−42.5	10/11/2001	--	<10	ND
		1/15/2002	--	<10	ND
		4/15/2002	<1	<10	ND
		7/16/2002	--	<10	ND
		10/10/2002	--	<10	ND
0524	20−30	10/11/2001	--	17	17
		1/15/2002	--	9.9J	ND
		4/15/2002	<1	22	22
		7/16/2002	--	20	20
		10/10/2002	--	22	22
0525	5−15	10/11/2001	--	23	23
		1/15/2002	--	50	50
		4/16/2002	<1	34	34
		7/16/2002	--	29	29
		10/10/2002	--	75	75
0526	19.5−29	4/16/2002	<1	<10	ND
RW02	10−20	10/8/2001	--	110	110
		10/11/2001	<1	--	ND
		1/10/2002	<1	110	110
		4/16/2002	<1	78	78
		7/15/2002	<1	98	98
RW03	9−24	10/8/2001	--	140	140
		10/11/2001	<1	--	ND
		1/10/2002	<1	81	81
		4/15/2002	<1	49	49
		7/15/2002	<1	57	57

[a]Total COPC is the sum of the individual COPC concentrations. "J" values are not included in the Total COPC value.

ND = Not detected.
-- = Not measured
J = Estimated value, result is between the reporting limit and the method detection limit.
B = Analyte also found in method blank.

Table 11. Summary of Analytical Results for Ground Water Samples Collected at the Northeast Site Treatment System
(*reported in micrograms per liter unless otherwise noted)*

Location	Date Sampled	cis-1,2-DCE	trans-1,2-DCE	TCE	Methylene chloride	Vinyl chloride	Toluene	Benzene	MTBE	Total VOCs[a]	$CaCO_3$ mg/L	Fe mg/L
PIN15		Northeast Site										
INF1	10/3/2002	4,400	<100	1,300	900	630	330	<100	<1,000	7,560	520	3.7
INF1	10/22/2002	4,200	39J	1,400	1,300	1,200	420	14J	<1,000	8,520	470	7.7
INF1	11/22/2002	4,000	<100	1,400	3,000	790	810	14J	<1,000	10,000	510	5.5
INF1	12/11/2002	5,300	<100	1,600	4,400	910	810	15J	<1,000	13,020	440	4.9
INF1	12/23/2002	4,800	<100	1,900	5,700	590	910	18J	<1,000	13,900	470	5.5
EFF1	10/3/2002	<1	<1	<1	<5	<1	<1	<1	<10	ND	510	3.2
EFF1	10/22/2002	<1	<1	<1	110	<1	0.32J	<1	<10	115.3[b]	430	7.6
EFF1	10/30/2002	<1	<1	<1	4.8J	<1	<1	<1	<10	4[b]	--	--
EFF1	11/22/2002	<1	<1	<1	0.53J	<1	0.24J	<1	<10	ND	510	4.5
EFF1	12/11/2002	<1	<1	<1	0.35J	<1	<1	<1	<10	ND	440	5.6
EFF1	12/23/2002	<1	<1	<1	<5	<1	<1	<1	<10	23[b]	410	6.3

[a]"J" values are not included in the "Total VOCs" value.
[b] Total VOCs value includes compounds not listed.
J = Estimated value, result is between the reporting limit and the method detection limit.
-- = Not measured
ND = Not detected.

Table 12. Estimated Mass of VOCs Recovered from the Northeast Site and Building 100 Recovery Wells During October, November, and December 2002

Month	Volume Treated (gallons)	Concentration[a]						
		cis-1,2-DCE (µg/L)	trans-1,2-DCE (µg/L)	Toluene (µg/L)	TCE (µg/L)	Methylene Chloride (µg/L)	Vinyl Chloride (µg/L)	Total VOCs (µg/L)
October 2002	765,015	4,300	45	375	1,350	1,100	915	8,085
November 2002	324,711	4,000	50	810	1,400	3,000	790	10,050
December 2002	741,261	5,050	50	860	1,750	5,050	750	13,510

Month	Volume Treated (gallons)	Recovery[b]						
		cis-1,2-DCE (lbs)	trans-1,2-DCE (lbs)	Toluene (lbs)	TCE (lbs)	Methylene Chloride (lbs)	Vinyl Chloride (lbs)	Total VOCs (lbs)
October 2002	765,015	27.5	0.3	2.4	8.6	7.0	5.8	51.6
November 2002	324,711	10.8	0.1	2.2	3.8	8.1	2.1	27.2
December 2002	741,261	31.2	0.3	5.3	10.8	31.2	4.6	83.6

[a]These concentrations represent the average of weekly sampling results.
[b]Includes "J" (estimated) values. For any detection of "<", which indicates the laboratory could not detect that analyte, 50 percent of the "<" value was used for the calculation of recovery.

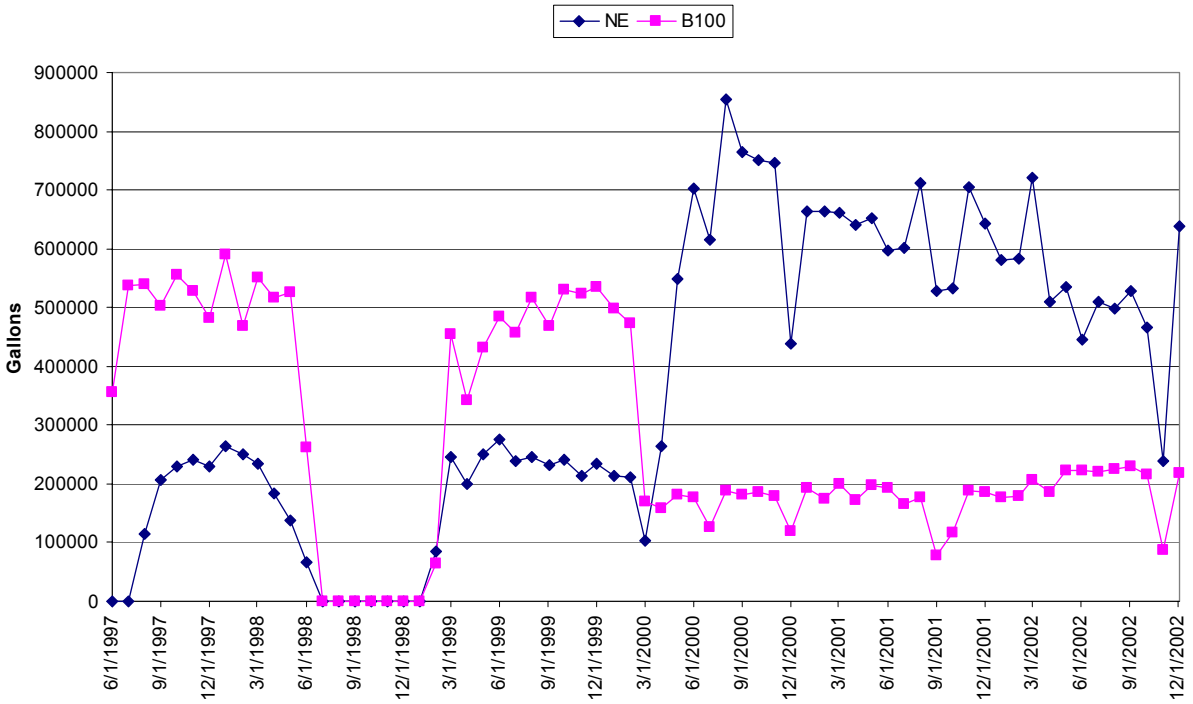

Chart 1. Historical Northeast Site and Building 100 Ground Water Recovery

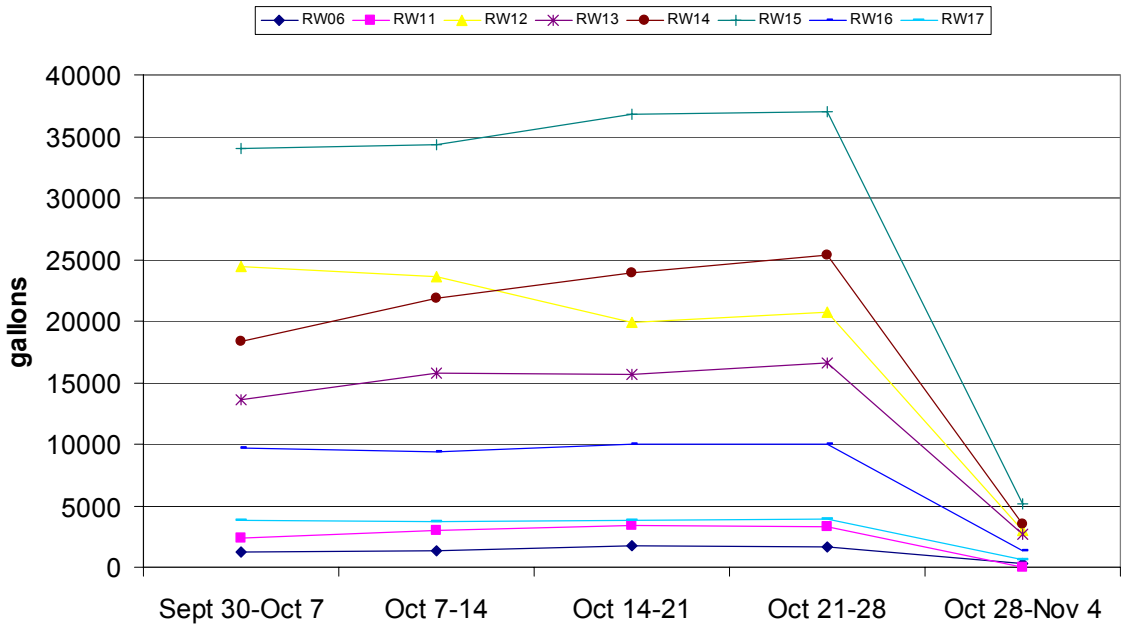

Chart 2. October 2002 Northeast Site (Individual Wells) Ground Water Recovery

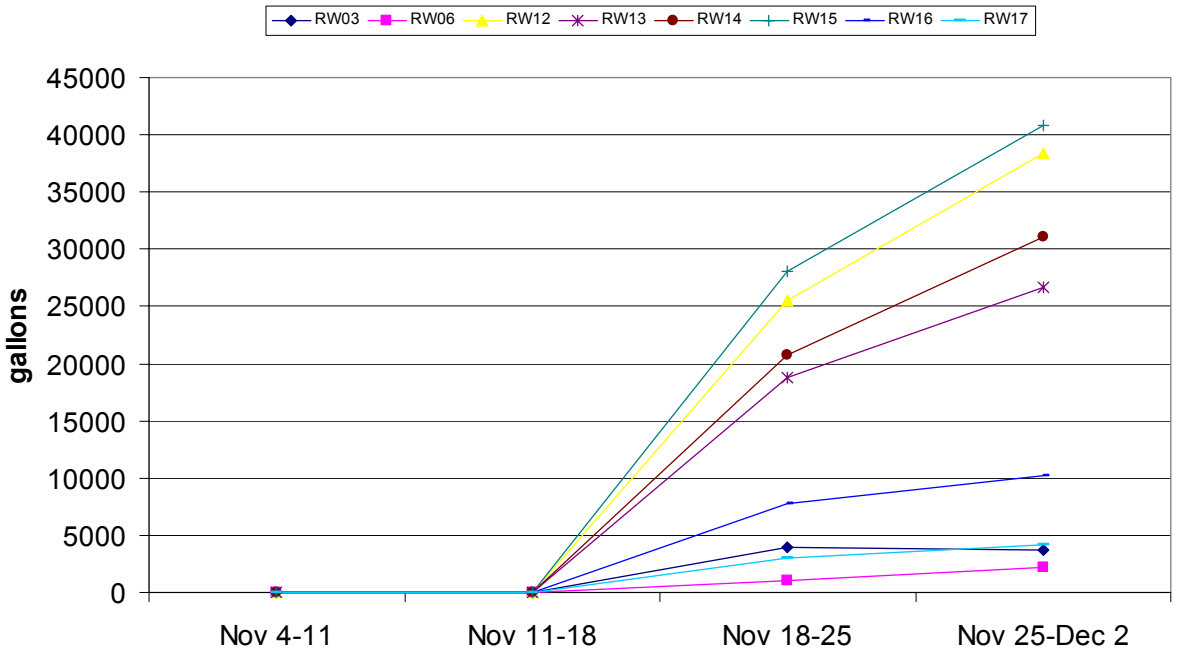

Chart 3. November 2002 Northeast Site (Individual Wells) Ground Water Recovery

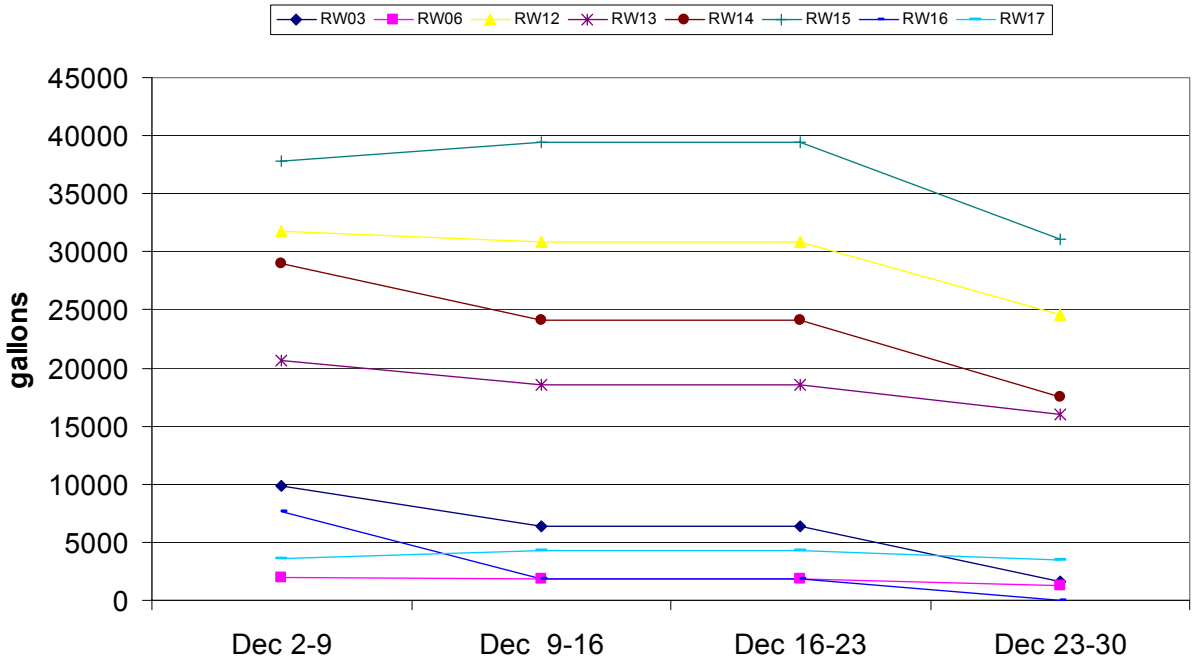

Chart 4. December 2002 Northeast Site (Individual Wells) Ground Water Recovery

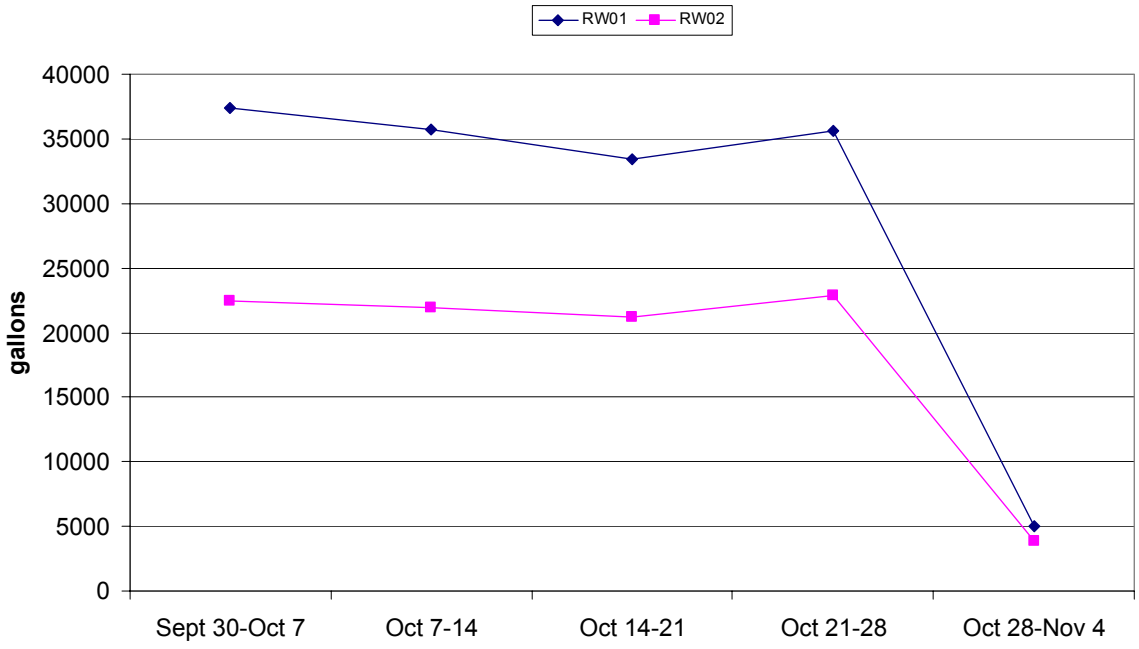

Chart 5. October 2002 Building 100 Ground Water Recovery

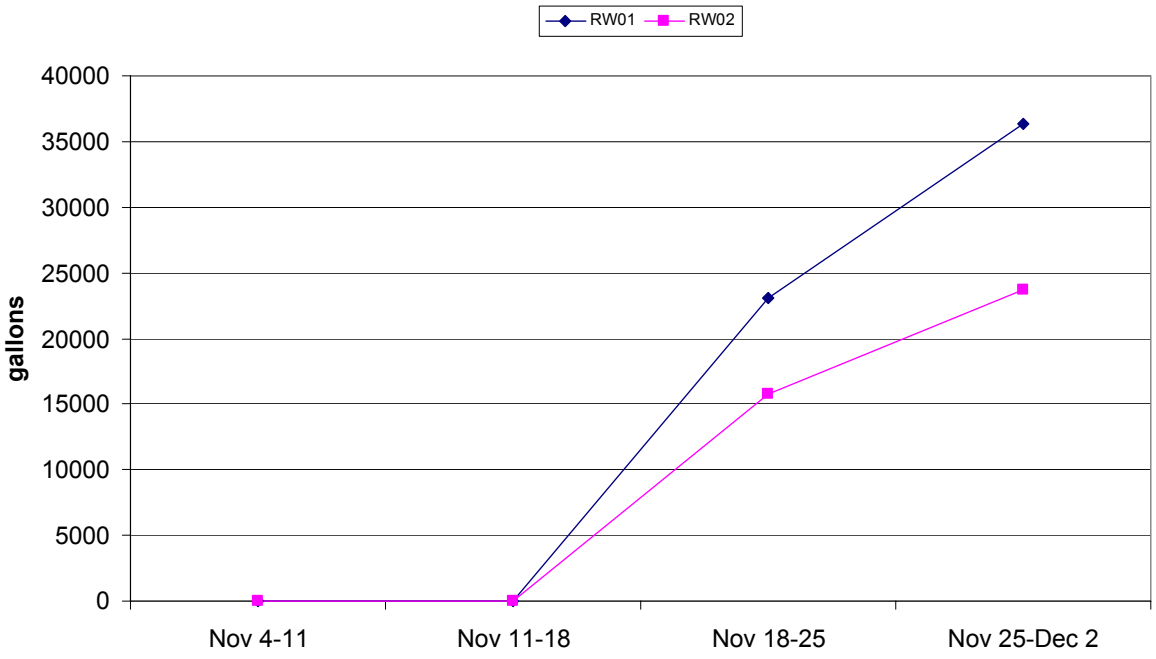

Chart 6. November 2002 Building 100 Ground Water Recovery

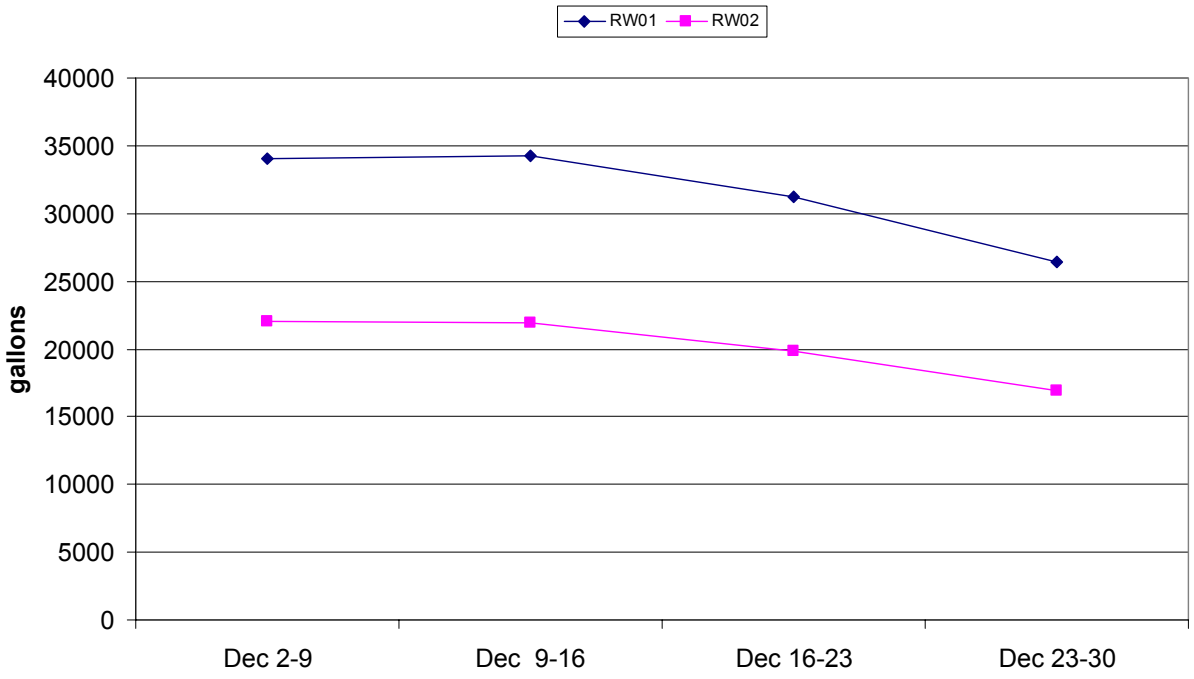

Chart 7. December 2002 Building 100 Ground Water Recovery

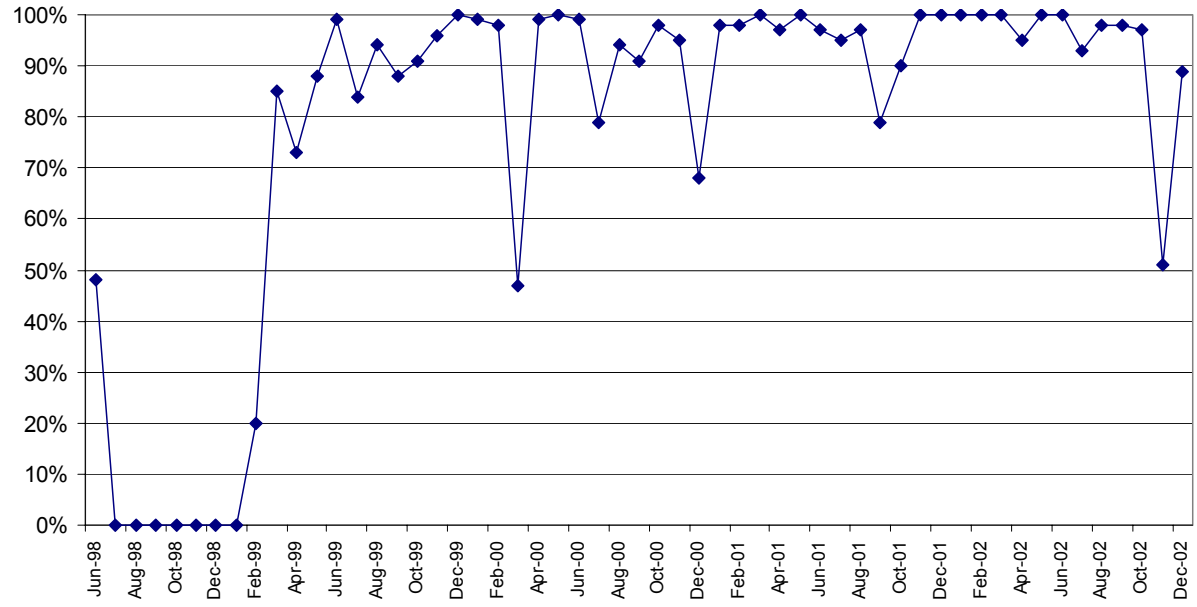

Chart 8. Historical Northeast Site Air Stripper—Percent Time On-Line

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Appendix A

Laboratory Reports—October 2002 Quarterly Results

Table A−1. Relative Percent Difference (RPD) for Duplicate Samples

Sample ID	Duplicate ID	Case Number	Constituent	S[a]	D[b]	RPD Value	5 times DL[c]	Fail[d]
PIN12-0513	PIN-0580	B214051	1,1-Dichloroethane	41	42	2.4	5	
			Arsenic	0.0038	0.0041	7.6	0.05	
			Barium	0.057	0.059	3.4	0.05	
			cis-1,2-Dichloroethene	22	22	0.0	5	
			Lead	0.0037	0.0031	17.6	0.025	
			Methylene chloride	1.6	1.3	20.7	25	
			Toluene	0.51	0.18	95.7	5	
			trans-1,2-Dichloroethene	2.2	2.4	8.7	5	
			Trichloroethene	0.27	0.5	59.7	5	
			Vinyl chloride	48	49	2.1	5	
PIN12-0523	PIN12-0581	B213991	Arsenic	0.0058	0.0034	52.2	0.05	
			Barium	0.053	0.054	1.9	0.05	
			Chromium	0.005	0.0023	74.0	0.05	
			cis-1,2-Dichloroethene	1	1	0.0	5	
			Lead	0.0043	0.0049	13.0	0.025	
			Mercury	0.00015	0.0001	40.0	0.001	
			Methylene chloride	1.7	1.3	26.7	25	
			Trichloroethene	0.2	0.16	22.2	5	
			Vinyl chloride	0.31	0.4	25.4	5	
PIN12-S68B	PIN12-0582	B214012	Arsenic	0.074	0.074	0.0	0.05	
			Barium	0.087	0.086	1.2	0.05	
			Chloromethane	0.14	0.12	15.4	50	
			cis-1,2-Dichloroethene	0.18	0.2	10.5	25	
			Lead	0.0061	0.0065	6.3	0.025	
PIN12-S72D	PIN12-0583	B214011	Arsenic	0.0089	0.011	21.1	0.05	
			Barium	0.12	0.17	34.5	0.05	Fail
			Cadmium	0.0028	0.0034	19.4	0.025	
			Chromium	0.11	0.13	16.7	0.05	
			cis-1,2-Dichloroethene	0.5	0.44	12.8	5	
			Lead	0.023	0.027	16.0	0.025	
			Mercury	0.00011	0.0001	9.5	0.001	
			Silver	0.0031	0.0035	12.1	0.05	
PIN18-0507	PIN18-0650	B214010	Arsenic	0.005	0.0036	32.6	0.05	

[a]S = Original sample (N001), VOC concentrations in μg/L and metals in mg/L.
[b]D = Duplicate sample (N002), VOC concentrations in μg/L and metals in mg/L.
[c]DL = Detected limit.
[d]Fail is an RPD greater than "30% and original or duplicate result more than 5 times the detection limit.

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Appendix B

Laboratory Reports for
Northeast Site Treatment System—October to December 2002

Appendix C

Laboratory Reports for WWNA—October to December 2002

Appendix D

Northeast Site Treatment System Historical Data Table

Table D−1. Historical Summary of Ground Water Recovery at the Northeast Site and Building 100

Report Date	Quarterly (gallons)	Total To Date (gallons)
April–June 1997	356,886	356,886
July–September 1997	1,899,871	2,256,757
October–December 1997	2,265,460	4,522,217
January–March 1998	2,358,081	6,880,298
April–June 1998	1,693,697	8,573,995
July–September 1998	0	8,573,995
October–December 1998	0	8,573,995
January–March 1999	848,912	9,422,907
April–June 1999	1,985,705	11,408,612
July–September 1999	2,158,568	13,567,180
October–December 1999	2,285,471	15,852,651
January–March 2000	1,670,059	17,522,710
April–June 2000	2,031,821	19,554,531
July–September 2000	2,728,441	22,282,972
October–December 2000	2,416,705	24,699,677
January–March 2001	2,977,868	27,677,545
April–June 2001	2,452,063	30,129,608
July–September 2001	2,262,233	32,391,841
October–December 2001	2,374,065	34,765,906
January–March 2002	2,449,505	37,215,411
April–June 2002	2,119,164	39,334,575
July–September 2002	2,211,860	41,546,435
October−December 2002	1,830,987	43,377,422

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